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money/123

# In Depth Balderdash!

Nonsense! Right on! Readers react Follows 80

#### In Depth

Can MIS lead the push for productivity? ID/35

# IBM seeks to end antitrust ruling

By Peter Bartolik

WASHINGTON, D.C. - IBM confirmed last week that it is seeking to terminate a 30-year-old antitrust settlement. Portions of the settlement required that the company halt its lease-only equipment practices

IBM's action will be opposed by the Computer Dealers and Le sors Association, the trade group representing third-party dealers and lessors who deal primarily in IBM equipment. The members of the CDLA depend on another settlement provision that effectively requires IBM to sell maintenance for used and new Two analysts who closely follow IBM's actions speculated that

the company may be pressing the issue to forestall any possibility of a challenge to IBM's practice of not selling large-systems soft-

Bob Djurdjevic, president of Annex Holdings Corp. and publisher of the "Annex Computer Report," said IBM's insistence on software licensing, rather than on direct selling, "may lead some parties to conclude that IBM's software practices are in violation

# Adapso plan nixed

Micro managers reject software lock-and-key protection proposal

By Edward Warner CW Staff

NEW YORK - The Microcomputer Managers Association, a group whose members claim to have spent \$100 million last year on software for their corporations, has voted to oppose the software copy-protection proposal that the Association of Data Pro-

cessing Service Organizations, Inc. announced in January.

The Adapso proposal would encourage its member software vendors to use a method of software protection involving a hardware lock and key that would need to be inserted in a personal computer's RS-232 port for the software to run. In a two-page letter sent last week to Adapso, MMA President Alan Gross said, "The MMA outright rejects Adapso's proposal as an infringement on our right to conduct our businesses in a manner we see fit."

The following are among the specific complaints the MMA

made against the Adapso proposal:

"Repeatedly, vendors have modified standards for their own marketing benefit and, in doing so, have introduced considerable incompatibility among systems." Adapso Senior Director

Interface '85 coverage

continues on pp. 10-14

# Execs cite shortage of communications pros

By Paul Korzeniowski CW Staff

ATLANTA — MIS managers are strug-gling to handle rapid growth in communications applications with a limited pool of communications technicians.

A random sample of MIS managers de-

livered that message at Interface '85 here last week.

Wayne Clifton, assistant vice-president at Mellon Bank in Pittsburgh, said, "It is difficult to find employees who under-stand hardware and software well enough to feel comfortable working with communications protocols.

The communications manager at a Ca-

nadian division of a U.S. firm said, "There are plenty of headhunters walking the floor at this show, so there must be a demand for communications professionals."

The chief reason for the shortage of qualified workers is the

rapid emergence of the technology. "The techtechnology. nology is so new that few workers have received enough on-the-job train-

ing to make them effective communica-tions technicians," reported a communications manager at a Pennsylvania telephone

He said there are few places a manager

can send an employee for training that substitutes for experience. "The only place where a manager can send an employee for system-level training is to IBM," the manager noted.

Faced with a limited number of qualified employees, data processing managers often rob Peter to pay Paul. Most managers claimed to look first

inside rather than outside their companies for communications employees. "We only look outside when we can't find someone in-house," said Clifton, who manages a See SHORTAGE page 11

#### **PRODUCT SPOTLIGHT**

# Micro nets: The next hurdle

# Complex connections hinder wide acceptance

By John Dix CW Staff

nough personal computers are relatively easy to use, interconnecting them in a local-area network can be a laborious task requiring the user to dive in up to his elbows in bits and bytes. This is a task, however, that an ever-increasing number of stand-alone microcomputer users are finding neces-

The unending arguments about local network access methods, signaling types and network topologies are outmoded,

replaced in the personal computer network industry by a new, more important set of problems. These include concerns about server implementations (disk or file, dedicated or nondedicated), file structures and controls that ensure data integrity, security, program sharing and software networking.

The complexity of interconnecting personal computers — in contrast to the ease-of-use features that made micros popular - contributes to the limited acceptance of micro nets. Less than 5% of all microcomputers in business today are networked, according to Kim Myhre, director of communications industry research at International Data Corp., a research firm in Framingham, Mass.

See NETWORKING page 17

#### **TOP OF THE NEWS**

American Brands, Inc. and Wilson Jones Co. flatly denied charges of software piracy brought by the Association of Data Processing Service Organizations, Inc. and Micropro International Corp. Page 2.

No way. That's what Digital Equipment Corp. said to IBM compatibility with its relaunch of the Rainbow personal computer as an office workstation. Page 7.

AT&T has targeted large businesses with its Software Defined Network Service. The service will allow portions of a long-distance switched network to be used as part of dedicated internal voice/ data systems. Page 10.

Accent on icons. Torus Systems, Inc. unveiled its Tapestry software environ-ment as an alternative to IBM's still unshipped PC Network software. Page 109.

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NEWSPAPER

# Xerox slapped with second fraud suit in six months

By Maura McEnaney CW Staff

MILWAUKEE — Two corporations are suing Xerox Corp., charging misrepresentation, fraud and breach of contract.

In the second of two separate suits filed in U.S. District Court here, the Wehr Corp., a Milwaukee-based manufacturing concern, is seeking \$10 million in punitive and compensatory damages for what it alleges was intentional fraud and misrepresentation by Rochester, N.Y.-based Xerox regarding the cost and time needed to install a Xerox integrated software system

A similar suit seeking \$4 million in compensatory and punitive damages was filed in October by Polar Ware Co. of Sheboygan, Wis., regarding the purchase of Xerox's Remote Computing Services.

Xerox has filed a written response to the Polar Ware complaint, denying the allegations. A spokesman for Xerox last week said the company was in the process of responding formally to the Wehr complaint.

Filed last month, the Wehr suit stated that in December 1983, Xerox submitted a three-pronged proposal for the installation of an integrated software package on Wehr's IBM 4331 Model Group II. The complaint stated that Wehr specifically required the project to be completed within one year from the date of the contract. Xerox reportedly priced the the software license and design of custom subsystems at \$992,875.

#### No systems implementation

According to the complaint, "not one business application system and necessary custom subsystems [has] been completed and implemented at all Wehr companies, and only 1% or 2% of the entire software system [has been] implemented to date."

Xerox billed Wehr \$918,569 for its services and later told Wehr "there was no way in which the Wehr data processing system could be implemented — both in terms of cost and time," the suit said.

A Xerox spokesman said, "The allegations are without merit." Xerox has 20 days from the filing of the suit to respond to the charges.

#### Specifically defined time frame

The Polar Ware suit filed against Xerox in October centers on the stainless steel products manufacturer's acquisition of an integrated financial and manufacturing control system. According to the complaint, the Xerox proposal specifically provided for the installation and implementation of its Remote Computing Services system and 12 software subsystem applications at the Polar Ware site by Oct. 1, 1983.

Xerox priced the Remote Computing Services system, including hardware, transaction costs and support personnel, at \$15,752 per month, according to the complaint. To complete the transaction, it continued, Xerox had said limited peripheral devices would be needed, data on an existing data base would be automatically loaded to the Xerox system and software modification would not be required.

Among its charges, Polar Ware maintained that Xerox is one year late in delivering the system, the average monthly cost has escalated to \$22,000 and software is "far from being satisfactorily installed."One year after the agreement was signed, the complaint said, a Xerox representative told Polar Ware "there was no way in which the Polar Stainless data processing system could function as proposed by Xerox — both in terms of cost and type of service."

In its written response to the suit, Xerox said Polar Ware's problems were "caused by [its] own negligence or misuse of the Xerox system." A jury trial has been set for mid-July.

# Piracy defendant to challenge 'shrink-wrap licensing'

By Mitch Betts CW Washington Bureau

CHICAGO — American Brands, Inc. and its subsidiary, Wilson Jones Co., in a filing in U.S. District Court here, denied all charges of software piracy as alleged by the Association of Data Processing Service Organizations, Inc. (Adapso) and Micropro International Corp.

In another development, an Adapso legal memo

In another development, an Adapso legal memo indicated that negotiations for an out-of-court settlement have begun.

The Adapso suit, part of a software industry battle against illicit software copying [CW, Jan.

21], charged the New York-based American Brands and Wilson Jones, based here, with 20 counts involving copyright and trademark infringement and with breach of licensing agreements from the unauthorized copying of three Micropro products: Wordstar, Mailmerge and Spellstar.

Answering the complaint late last month, American Brands and Wilson Jones denied each charge with little elaboration. The filing did hint that the defendants plan to challenge the software industry's practice of "shrink-wrap licensing," where users purchase software and, by the action of tearing open the package, agree to a license agreement

that forbids copying

American Brands and Wilson Jones argued that Micropro's "purported license agreements ... were not agreed to by Wilson Jones, .. are not enforceable because Wilson Jones was the owner of the subject computer programs and instruction manuals ... [and] ... are null and void as contrary to public policy."

to public policy."
In the suit filed by Adapso and Micropro, the complainants said that upon acquiring and opening the software packages, Wilson Jones became bound by the terms of Micropro's End-User Program License Agreement printed on the packages.

# Apple calls one-week halts

CUPERTINO, Calif. — Apple Computer, Inc. announced last Thursday it will halt manufacturing operations for staggered one-week periods this spring to reduce an inventory backlor.

The company said it will shut down its three Apple II facilities March 18-22 and will shut down its Macintosh facility April 8-12. The company in January had warned of increasing dealer inventories and last week reported that sales continued to he soft.

Apple said it will ask employees to use accrued vacation time during the shutdown.

# Sorry for the holdup

A recent change in the newspaper and magazine distribution system has created a slowdown in the delivery of Computerworld. CW is working with postal and distribution authorities to normalize delivers.

CW apologizes for any inconvenience and appreciates its readers' patience. IBM has announced two desktop versions of its Series/1 minicomputer/4

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CW at Interface '85: Networking product introductions stole the show . . . Networks are becoming as important a strategic business asset as the computing resources they interconnect . . . Codex Corp. and Case Rixon Communications, Inc. announced products for central site network management . . . Delta Air Lines, Inc. has installed what may be the largest central site network control and management system in use today/10-13

CW at Fose: The micro-mainframe solution varies from one shop to another, according to one consultant . . . The U.S. is said to be losing its battle against the invasion of privacy in the computer age . . Morale is low at federal agencies, according to their DP workers/14-15 The Federal Communications Commission said that local telephone companies may perform asynchronous-to-X.25 packet-switching protocol conversion — under certain conditions/19

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CW at IDC Briefing: MIS managers will be spending more money on off-theshelf software this year, an IDC survey revealed . . . One analyst said he believes MIS managers must confront the issue of departmental minicomputer systems/20-21.

A preliminary investigation by the San Francisco Police Commission has cleared the city's police department of wrongdoing in the recent controversy over a breach in computer security/22

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across the country/32

A city in Minnesota has brought its data processing operation in-house, and officials there said the results have been good/36

An equipment leasing firm has broadened its boundaries through the use of portable micros/37

The MIS team at a newly created oil firm pieced together a networked data facility with three days to spare/40

A major public utility is optimizing its resources — and better meeting its customers needs — through the use of a mainframe spreadsheet package/46

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# IBM offers dual-processor desktop models of Series/1

RYE BROOK, N.Y. - IBM last week unveiled two desktop models of its Series/1 minicomputer dual-processor systems that also run IBM Personal Computer programs.

The new systems will run existing Series/1 applications and can support up to four IBM 3101 terminals and two printers or operate as micros after restarting, IBM said. They combine a CPU card

built around a Series/1 microprocessor and an at-tachment card with either a Personal Computer AT or modified Personal Computer XT.

The IBM Series/1 5170 Model 495 processor is based on a Personal Computer AT and features 512K bytes of random-access memory 20M-byte hard disk drive, a floppy disk drive that stores 1M byte of Series/1 files and 1.2M bytes of PC-DOS files, four RS-422 ports and two RS-232 ports. Limited shipments will be made in November, but general availability is not scheduled until the first quarter of 1986. With monochrome display and adapter, the system costs \$9,420.

Scheduled for July delivery, the Series/1 4950 is built around a Personal Computer XT modified to meet greater cooling requirements. It comes in two models, both with 256K bytes of RAM and four peripheral ports. IBM said.

The 4950 Models A. B.

The 4950 Model A has a 10M-byte hard disk drive and a floppy disk drive, which handles 320K bytes of Series/1 files and 360K bytes of PC-DOS files. It costs \$8,130 with monochrome display and adapter. The 4950 Model B provides one floppy disk drive. Options include a second floppy disk drive and the IBM 5161 Model 3 expansion unit with two 10M-byte hard disk drives. A 4950 Model B configuration with monochrome display and adapter plus the expansion unit costs \$10,420.

The machines run under versions of EDX and RPS, the two main Series/1 operating systems. All Series/1 applications written for those operating systems execute on the desktops, subject to memo

ry requirements and support of specific peripher-

als, an IBM spokesman said. EDX Version 5 is priced at \$750, and RPS Vercosts \$2,800. Programs for the 4950 will be available in July; 5170 Model 495 programs will be offered in the first quarter of 1986.

A separate Series/1 I/O Executive program controls I/O when the systems are in Series/1 mode. Available in May, the program costs \$650.

Switching between Series/1 and Personal Computer modes requires rebooting the computer, IBM noted. Users are able to partition the hard disk drives to store both Series/1 and Personal Computer files, but no facilities have been added to convert files between the two environments.

IBM also introduced a dot matrix printer, the Model 4971, for the new desktops. The system, which offers bidirectional printing with a maximum speed of 120 char./sec, costs \$700 and will be

delivered in July, the company said.

IBM Information Systems Group is located at 900 King St., Rye Brook, N.Y. 10573.

# Series/1 software debuts

# IBM also bolsters existing packages

By John Gallant CW Staff

RYE BROOK, N.Y. - In conjunction with the introduction last week of two desktop versions of its Series/ 1 processors, IBM announced additional software packages and en-hancements to existing software for the Series/1.

The software introductions in-clude the following:

■ The Series/1 IX, an AT&T Unix System V-based operating system designed to allow users of the IBM 4956, the largest Series/1 processor, to run Unix applications.

■ The Transaction Processing Syswhich includes programs for medium- and large-scale Series/1s that are said to simplify the development of transaction-oriented applications

Enhanced versions of the two main Series/1 operating systems, EDX and RPS, which support expanded capabilities announced earlier for IBM's high-end 4956. IBM also announced versions of the enhanced operating systems designed to run on the desktop Series/1 processors

An IBM spokesman described the Series/1 IX as a multiuser, time-sharoperating system featuring a flexible command language, device-independent I/O, a hierarchical file system, program development and document preparation tools and file and source code controls. Series/1 IX also features file and record locking and a file protection system. Because the product is based on System V, it is compatible with the recently an-nounced IX/370 VM implementation of Unix.

The EDX and RPS versions of IBM's Transaction Processing System are said to be applications development systems that provide programming tools to assist in the development of transaction-oriented end-user applications.

Version 5 of EDX and Versions 7 and 7.1 of RPS support the expanded processing and partitioning capabilities announced last year for Series/1

high-end 4956 Models E and 60E. Version 7 is said to support a uniprocessor Series/1 configuration, and Version 7.1 supports multiprocessor configurations.

Separately, IBM announced prod-ucts that will permit larger Series/1 systems to act as gateways for the IBM PC Network, according to the vendor. The products, a pair of IBM Series/1-to-Personal Computer channel attachment cards and a Series/1-PC Connect program, reportedly will allow Personal Computers on a PC Network to use the 4954, 4955 and 4956 Series/1 processors to communicate with other PC Networks or with IBM mainframes

Data can be transmitted from Personal Computers on the local-area network to the Series/1 at speeds of up to 400K bit/sec, according to IBM. Combined with IBM's PC Network Systems Network Architecture 3270 Emulation Program, the offerings will permit a Personal Computer on the network linked through a Series/ I to appear to a host computer as a 3270 terminal, an IBM spokesman

Version 5 of EDX for the desktop processors has a one-time charge of \$750, and Version 7 of RPS for the same systems has a one-time charge of \$2,800. Both will be available in July for the IBM Series/1 4950 desktop unit and in the first quarter of next year for the Series/1 5170 Model

Both the EDX and RPS versions of the Transaction Processing System have a one-time charge of \$2,950. The former will be available this month and the latter in April. Series/ 1 IX will be available in September at a one-time charge of \$6,500. Version 5 of EDX, with a one-time charge of \$2,200, and Version 7 of RPS, with a one-time charge of \$10,000, are scheduled for shipment this month. Version 7.1 of RPS will be available in July at a one-time charge of

Price of the Series/1-to-Personal Computer cards and connecting cable is \$3,700. The Series/1-PC Connect program will cost \$400. Both will be available in July, IBM said.

IBM is located at 900 King St., Rye Brook, N.Y. 10573.

# Options spur Series/1 appeal

By Tom Henkel CW Staff

An attra 'ive option for current users of IBM's Series/1 line of proces-- that is how industry analysts viewed last week's desktop Series/1 processor announcements. The additional software capabilities and the ability to link full-size models of the Series/1 processor with the IBM PC Network indicate IBM's intent to keep the Series/1 viable as a distrib-uted processing product, industry watchers said.

IBM said the desktop models were designed mainly for current Series/1 small satellite offices where the \$30,000-plus, full-size Series/1 processors could not be justi-

The newly announced systems have some limitations, however. An spokesman explained that although the Series/1 5170 Model 495 and Series/1 4950 are capable of running applications developed for larger Series/1 processors, users of the desktop models are limited to applications capable of running with less than 512K bytes of main memory. The full-size Series/1 models can accommodate up to 2M bytes of main memory. Furthermore, the spokes-man said, the desktop models cannot be used for the sensor-based applications commonly used in factory automation.

For current Series/1 users, the desktop models may be attractive, said Sandy Gant, an analyst with Infocorp, a market research firm in Cupertino, Calif. Noting that the desktop models cost roughly a third of the price of the full-size Series/1 models, Gant said the significant communications software offered on the Series/ 1 will be attractive.

Further use of the board-level Series/1 processor that IBM introduced with the announcement may develop from the desktop Series/1 models. Noting that IBM already has a strong OEM clientele for the Series/1, Peter Lowber an analyst for the Bostonbased Yankee Group market research firm, said an OEM board-level version of the product could prove to be a hot seller.

Lowber said the software enhancements for the larger versions of the Series/1 are keeping with IBM's apparent intent to boost the transaction processing capabilities of the Series/1 line and provide IBM microcomputer users with as many interfaces to larger systems and communications environments as possi-

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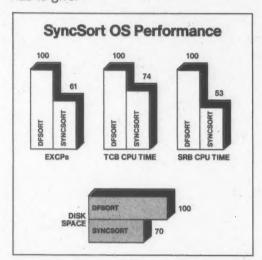
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# ANTITRUST from page 1

of the consent decree," he said. Frederick T. Withington of Arthur D. Little, Inc. said systems software is increasingly important to IBM and generates more than \$3 billion in revenue. "A lot of people have noticed they are effectively tied in or locked in. . . . They are obligated to pay but still [do] not own the product," he

CDLA representatives are expect-ed to meet with Justice Department officials possibly as early as this week to voice concerns over the issue, according to CMI Corp. President Edward Cherney, chairman of the

CDLA's IBM Relations Committee.
At the center of the developing controversy is the judgment commonly known as the 1956 Consent Decree. The decree ended a government antitrust suit against IBM and, most significantly, included IBM's agreement to stop its lease-only practice and to sell computer equipment outright at terms no less favorable than in leases

Kurt Shaffert, an attorney with the Justice Department's Antitrust Division, said the division is reviewing two IBM antitrust settlements. He said a formal program was initiated two years ago to reevaluate a large caseload of civil judgments to deter-mine "if they make sense in light of current circumstances to remain in effect or whether to recommend to the court that they be modified or terminated." It would be up to IBM actually to request court action.

The Antitrust Division is review-

ing a 1936 decree barring IBM from discriminating against equipment customers who bought tabulating cards from companies other than IBM. The division is also reexamining the 1956 decree that requires IBM to sell equipment and to adhere to a number of other provisions.

Shaffert said the division wel-comes comments from interested parties on the impact of modifying or terminating the consent decree

IBM spokesman Lyle Maguire said the company believes that the 1956 judgment "is totally outdated and to-tally irrelevant." He said IBM has been providing information to the Antitrust Division for some time.

#### Additional decree provisions

In addition to the requirement that the company sell machines outright, Maguire said the consent decree also requires IBM to provide equipment purchasers with services similar to those received by equipment lesse The consent decree also calls for IBM to provide repair and replacement parts at reasonable prices. Some provisions of the agreement were only in effect until 1961, he added.

The CDLA, whose members participate in the thriving industry of buy-ing, leasing or reselling IBM equipment, is attempting to determine exactly what elements of the 1956 decree were permanent, Cherney said last week. When that is accomplished, "we will try to analyze why IBM is trying to overturn it," he said. Cherney said he had specific concerns but did not want to voice them until obtaining clarification of what provisions would remain in effect.

CDLA members were briefed at the association's spring meeting held last month and received a report on a meeting CDLA officers held with IBM in late January. Sources said the CDLA told IBM it will vigorously fight any attempt to terminate the consent decree and that the association is particularly concerned about the issues of nondiscriminatory maintenance and pricing.

Annex Holding's Djurdjevic said the decree required IBM to continue offering maintenance for its equipment for a number of years after certain products are discontinued. He claimed that eliminating the provision would boost marketing of newer IBM products and would also add to IBM's profits. The ability to obtain IBM maintenance of used equipment is a vital asset to lessors and dealers in the reselling of used equipment.

IBM in recent years has discouraged direct leasing or rental of hardware and, with approximately 90% of hardware revenue generated through sales, it seemed unlikely to revert to an aggressive rental policy.

# NO from page 1

of Public Communication Dave Sturtevant, said, however, that no Adapso member would be required to use the protection scheme if Adapso was to approve it.

■ The installation of hundreds of thousands of hardware keys on systems around the country "would be a logistical nightmare, costly and timeconsuming.

Employees using the same software on several personal computers when permitted by copyright would be forced to carry several hardware keys with them or purchase duplicate keys for each com-

puter.

"The proposal does not address

The letter also called "grossly overstated" Adapso's claim that half of all software in use is bootlegged and charged that those truly interested in breaking the protection scheme would eventually be able to do so.

Should the Adapso proposal be ap proved, Gross said it would be "up to individual members to speak with their purchasing dollars. And they intend to." Gross said the MMA members represent a group of Fortune 500-size firms that will spend a total of \$200 million on software this year.

The letter, sent to Adapso's Sturtevant, requested a meeting be set up between the two groups to work out their differences and also suggested the use of site licenses as a copyright protection alternative for corporate users.

Versions of site licenses permit us ers to pay a flat fee for unlimited copies of a program or to use the program on a local-area network

Sturtevant, meanwhile, called the

MMA's decision "somewhat irresponsible," adding, "I think it's kind of interesting that [it] gave [the proposal] such short shrift." Sturtevant said Adapso had sent the proposal to the MMA hoping that it would review it and send back comments. "It appears [that the MMA has] decided to shortcircuit that process," he said.

#### Will MMA members refuse to buy?

As to whether the MMA members might refuse to buy software incorporating the proposed protection scheme, Sturtevant he said, "Corporate America would find it difficult to turn its back on the best solutions these [vendor] companies are provid-

Adapso is a trade organization representing service bureaus and the vendors of computer products, training, turnkey systems and software. Sturtevant said approximately 120 personal computer software vendors hold Adapso membership, including Lotus Development Corp., Ashton-Tate, Micropro International Corp. and Microsoft Corp.

The letter, Gross reported, is the outgrowth of two MMA meetings on the proposal. The 40 members of the MMA voted 39 to 1 to oppose the proposal at a meeting last month, he said.

In the letter, one unidentified MMA member was quoted as having expressed the opinion of the organization when he said, "Adapso's proposed software protection, if adopted, would certainly have a negative impact on the way in which we do

The MMA is one of 10 independently managed associations of corporate microcomputer managers in the U.S.

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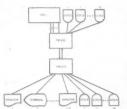
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# **DEC relaunches Rainbow as office workstation**

# Firm rolls out tools for desktop micros

By Eric Bender CW Staff

MERRIMACK, N.H. — Three weeks after acknowledging that demand for its Rainbow personal computers was so weak that production lines were being shut down, Digital Equipment Corp. has reintroduced the high-end Rainbow as an office workstation.

DEC also unveiled a common suite of word processing and other office packages for its three desktop microcomputer lines, designed to boost links between those machines and VAX superminicomputers, and launched Decnet communications software for the Rainbow.

While approving these efforts to boost common office functions across DEC's product family, analysts generally paid more attention to DEC's continuing refusal to introduce a microcomputer compatible with the IBM Personal Computer.

"Anyone can make an IBM-com-

77

'[DEC is] not accepting that there is a de facto standard. The game is over, and the customer wants an IBM [machine].'

— George Colony Forrester Research, Inc.

patible machine," DEC President Kenneth Olsen Insisted at last week's presentation here. "A harder job is integrating personal computers into an organization to do useful work."

Integrating the Rainbow more tightly with other DEC systems represents a good move for DEC, but the overall announcement "reiterated the strategy of three years ago," commented George Colony, president of Forrester Research, Inc. in Cambridge, Mass. "They're not accepting that there is a de facto standard" for personal computers, Colony said. "The game is over, and the customer wants an IBM [maehine]."

Michael Geran, vice-president for research at E. F. Hutton & Co. in New York, agreed that the lack of an IBM-compatible personal computer will limit sales, particularly outside DEC's existing customer base. The office software enhancements represent "a step forward but not a major step," Geran said.

Priced at \$6,495 and scheduled for July shipment, the Rainbow 190 combines DEC's existing Rainbow 100+—with 640K bytes of random-access memory (RAM), 10M-byte hard disk drive, keyboard and monochrome monitor — with Rainbow Office Workstation and WPS-Plus/Rainbow software packages.

Rainbow Office Workstation, available separately for \$495, reportedly provides user menus consistent with DEC's VAX/All-in-One Office and Information System. The package also gives an interface for word

processing and electronic mail functions, according to DEC.

Among its features are VAX/VMS mail system capabilities, including automatic mail notification, pickup and delivery; the ability to back up Rainbow files on the VAX automatically; and conversion of data downloaded from the VAX into Data Interchange Format and Sylk formats. The package requires 256K bytes of RAM, a hard disk drive and Microsoft Corp.'s MS-DOS 2.11.

The WPS-Plus/Rainbow word processing package is compatible with the Decmate WPS and VAX WPS-Plus/VMS word processing applications and offers menus consistent with All-in-One, DEC said. WPS-Plus/

Rainbow documents can be interchanged with Decmate WPS documents via floppy diskette. Other features include the ability to transfer data from third-party applications to WPS-Plus/Rainbow and to convert WPS-Plus documents to MS-DOS files. The program, which requires 384K bytes of RAM and MS-DOS 2.11, will be available in June for \$595.

Decnet-Rainbow is a \$295 communications software package giving Rainbow users access to most Decnet functions, according to the company. Connected to the network via a VAX multiplexer or Decnet router, the Rainbow can act as a Decnet end node, company officials said. Scheduled for September, shipment, the

package will support remote file procedures, resource sharing and VT100 terminal emulation.

DEC also announced enhancements of Office Workstation soft-ware for the Decmate and Professional. Decmate Office Workstation, Release 2.0, will be available in July for \$395. Pro/Office Workstation, Release 1.4, will be priced at \$995 and shipped next month.

In addition, DEC introduced thirdparty applications for the Rainbow. Lotus Development Corp.'s Symphony and Ashton-Tate's Dbase III are both priced at \$695 and scheduled for March 18 availability.

DEC is headquartered in Maynard,

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# IBM offerings sidestep DOS, but users sticking with it

By John Desmond CW Staff

CHATTANOOGA, Tenn. — All that IBM's recent blizzard of software announcements [CW, Feb. 18] did for one die-hard DOS/VSE user here was to increase the pressure to move to MVS/XA, an operating system it does not want.

Olan Mills, Inc. of Tennessee, a national chain of portrait photographers based here, runs DOS under VM on its 3083 and 3033 mainframes. Like many users of DOS, IBM's most popular mainframe operating system, Olan Mills finds the business case for converting to MVS/XA hard to justify, according to Peter Clark, systems programming administrator at Olan Mills.

Clark said in a recent interview that for the same functionality he has now, it would cost \$2 million for him to convert to MVS/XA. He added that his monthly software costs would triple. "You're losing as much as you're gaining, and you pay significantly more for it," he said of a DOS-to-MVS/XA conversion. "The announcements don't do much for the DOS user except allow a better [less expensive] migration to MVS/XA."

The absence of any mention of DOS in the recent IBM announcements has reinforced the view of industry watchers who believe that IBM cannot continue to commit resources in support of more than two major operating systems. The analysis of the support of more than two major operating systems.

lysts say IBM is subject to the same pressures that are pushing companies like Sperry Corp. and NCR Corp. away from proprietary operating systems and toward an industry standard such as AT&T's Unix.

"It comes down to pure economics. It costs a bloody fortune to do the maintenance for an operating system," said Marc Butlein, a vice-president with Gartner Group, Inc., a consulting firm in Stamford Come.

sulting firm in Stamford, Conn.
"I think IBM believes VM will
eventually be the operating system
that goes from the bottom to the
top," Butlein said. "VM would represent a migration path for current
DOS/VSE users. I think by the end of
the 1980s we will see the end of support for DOS/VSE. The DOS users of
the [1980s] will be the VM users of
the [1980s]."

But DOS has not been left entirely out in the cold yet. A new version of DOS, VSE/SP Version 2.1, was announced a year ago and is scheduled to begin shipping next month. The new version answer's user demands by increasing virtual address space from 16M bytes to 40M bytes.

"That should confirm our commitment to DOS," an IBM spokesman said of the new release, adding that DOS "is still one of our largest installations, is growing and will continue to grow."

The big growth years for DOS were from 1979 to 1984, when the number of processors running it in-

Operating Land System
Distribution
IBM 360, 370, 4300,
30 series

46.5%

26.4%

13.98%

DOS VM OS/VS1
DOS/VS MVS/SP
DOS/VSE MVS/XA

IDC FIGURES AS OF DECEMBER 1983; CW CHAR

Totals do not include operating systems running as guests under VM

creased by 800%, according to International Data Corp. (IDC), a Framingham, Mass.-based market research firm. DOS, DOS/VS and DOS/VSE are used by 46.9% of IBM 360 and 370, 4300 and 30 series users, in IDC's estimation (see chart).

But the big growth years have passed. As companies using VSE grow in size, the demand for virtual address space and more efficient I/O increase. Many users upgrade to VM and run DOS/VSE as a guest, and some upgrade directly from VSE to MVS, IDC said. In a 1984 survey of 217 IBM 4331, 4341 and 30 series users who upgraded operating systems, IDC found that 49.1% chose VM, 20.3% chose MVS/XA, 11.4% chose MVS/SP and 8.1% chose DOS/VSE.

DOS is popular because it requires less hardware and less training and costs less than MVS or VM with guest operating systems, observers said. DOS does not have all the facilities of MVS, such as built-in Dasd management, but according to Philip Dorn, president of New York-based Dorn Computer Consultants, Inc., "DOS/VSE runs like a bat out of hell."

In native mode, VSE runs only on machines up to and including the IBM 3033. On the 3081s, 3084s and now 3090s, VSE is supported only under VM, because those processors use a 4K-byte memory page instead of the 2K-byte memory page used by VSE. IBM has not indicated whether it will announce 4K-byte paging for VSE on the larger processors.

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# Software tides over DOS user in meantime

WAUKESHA, Wis. — One DOS/ VSE user at a municipal service agency, who believes that IBM will eventually merge the capabilities of DOS and MVS, satisfies 250 users in the meantime with the help of third-party data base software.

John Ernst, data processing director at the Southeast Wisconsin Regional Planning Commission here, runs DOS/VSE under VM on his IBM 4381 Model 1.

Ernst's problem is keeping his 250 on-line users happy within the 16M-byte virtual address space of DOS/VSE until the dust settles. His strategy is to buy Applied Data Research, Inc.'s (ADR) Datacom/DB data base to free virtual storage space.

Ernst now has 650 Vsam files online, each defined to CICS and each consuming virtual storage. With the data base, all Vsam files can be defined to the data base, and the data base manager controls access to the 650 files. Thus 3M bytes of virtual address space will be freed. "I can hold out for another 18 months," using the ADR data base, he said. When VSE/SP 2.1 ships, Ernst said

When VSE/SP 2.1 ships, Ernst said he plans to buy it to obtain a 40M-byte virtual address space, even though, he said, the new release will have slower performance beyond 16M bytes. "With 250 terminals, I can't afford to lose performance," he said, but other advantages of VSE/SP 2.1, like a conditional capability. in JCL and a new system library structure, make it attractive.

With MVS, he conceded, "I would get more work out of my machines because I'm at the limit of what DOS can handle."

# DOS' future may include MVS merger

Where does DOS fit into IBM's future plans?

Mark Combs, vice-president of development at software vendor Computer Associates International, Inc. of Jericho, N.Y., said he believes the role of DOS will be to complement MVS.

The area of overlap is getting smaller between the two systems, so much so that DOS is seldom run on a 3083 mainframe or above, and MVS is seldom run on a 4381 or below, he said. Rapidly growing shops will have to move to MVS eventually to support a larger configuration, but for entry-level and distributed processing systems, "DOS is the perfect solution," he said.

DOS is strong in the marketplace, and one indication of that strength is the greater availability of DOS third-party software, according to Gordon Thomas of Davis, Thomas and Associates, a Minneapolis-based consulting and contract programming firm.

"I've been working with DOS since 1972, and there's more [third-party software] available now than there's ever been," both in utilities packages and business applications, Thomas said. "I don't see it diminishing," he said.

Analyst Bennett I. Moyle, president of B. I. Moyle Associates, Inc., a systems programming and consulting firm in Minneapolis, said when VSE/SP 2.1 ships and VSE users gain their 40M-byte address space, the migration to VM will slow down. VM does allow systems programmers and production workers to work side by side without interfering with each other.

See DOS page 9

# VDT shield introduced

# **Industry** association questions necessity

By Mitch Betts CW Washington Bureau

WASHINGTON, D.C. — A VDT radiation shield, said to block 98.5% of low-frequency electromagnetic waves emitted from VDT screens, was introduced in the U.S. last week.

A computer industry group immediately called the product introduction "very irresponsible," charging that scientists have not proven that such low-level radiation is harmful to humans (see story on right). Sentinel Biotech Products of Hyannis, Mass., a division of Packaging Industries Group, Inc., demonstrated the Sentinel VDT Bodyguard at a news conference here, featuring the product's Japanese inventor Kenichi Noda and a nuclear chemist at the University of Waterloo in Ontario, Hari D.

Sharma.
The VDT Bodyguard is an acrylic screen that is attached to the VDT. It contains wire mesh connected to a ground wire "that continually drains the electrical charges collected by the system," the vendor said.

The product is now available directly from Sentinel, a spokesman said, and will be available in retail computer stores by this summer. Mitsubishi International Corp. has been selling the product in Japan since October 1984. The shield costs between \$160 and \$260, depending on the size

and quantity purchased.
Sentinel is located at One Sentinel Plaza, Hyannis, Mass. 02601.

# DOS from page 8

However, for users looking for minimum systems programming and hardware to solve business programs, VM is inconsistent with DOS, Moyle said.

IBM has stated that while it will enhance DOS virtual address space, it does not intend to provide DOS with the 31-bit addressing capability of its Extended Architecture.

In a statement issued in February 1984, IBM reported, "MVS provides the facilities for the exploitation of large-systems hardware technology,

including 31-bit addressing."
IBM continued, "IBM does not intend to implement these facilities in a VSE product. VSE customers experiencing high growth rates should plan to migrate to MVS."

The latest IBM emphasis on VM and MVS/XA should serve as a warning to DOS users, according to Shaku Atre, president of Rye, N.Y.-based Atre International Consultants, Inc. "If I had DOS installed in my environment, I might be a little worried about support from IBM," she maintained.

Atre added, "If IBM could have its way right now, I think it would love to get rid of DOS. Maintaining three operating systems is expensive for IBM."

Notwithstanding the incentive to buy MVS/XA, an IBM spokesman said DOS users "really don't have anything to worry about.'

# Cbema calls announcement 'irresponsible'

WASHINGTON, D.C. — An industry group reacted quickly and negatively to the U.S. introduction of a VDT radiation shield by Sentinel Biotech Products.

Charlotte LeGates, spokeswoman for the Computer and Business Equipment. Manufacturers Association (Cbema) here, said the marketing effort is "very irresponsible." LeGates commented, "Not only does it play on people's fears, [but it also] is exploiting the fact that radiation is very hard to understand for nonscientists."

Cbema has steadfastly asserted that dozens of studies by public and private agencies have found no link between health problems and VDT radiation.

Cbema cited a 1983 report by Canada's Minister of National Health and Welfare that stated, "On the basis of the available scientific data, the [extremely low-fre-

of the available scientific data, the [extremely low-frequency| emissions from VDTs are unlikely to be of any health implications."

The report also added, "This is because the intensi-ties of the magnetic field are [very] low, well below the intensities that have been shown to produce biological

A spokesman for Sentinel said the firm acknowledges that scientists have not proven that low-level electro-magnetic radiation is unhealthy but said that labor unions and media reports continue to raise questions about the radiation hazards of VDTs. Referring to the new shield, he said, "The product is there for the people who want to buy it.

"We don't claim VDTs are a health hazard. It's up to other people to decide that. We're presenting a product to the market," the vendor spokesman said under ques-

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# Charges based on usage, local rates

By James Connolly CW Staff

WASHINGTON, D.C. - AT&T Communications has announced a voice/data network service designed to let largebusiness customers establish 9.6K bit/sec links on a switched as-needed basis rather than through dedicated lines.

The company filed a tariff last week with the Federal Communications Commission to offer its Software Defined Network Service beginning in the third-quarter of this year.

Customers with geographically dispersed operations reportedly can use a dumb terminal on their premises to control call routing through the service. A spokesman said customers would first order lines from their facilities to any of 600 AT&T offices. He said digital and analog links would be switched through the more than 100 AT&T No. 4 Electronic Switching Systems running the service in AT&T offices na-

Customers would pay only the existing monthly cost of the local switched or special access connections and AT&T longdistance charges according to usage rather than by the full monthly rate for a Dataphone Digital Service private line.

Proposed business-day charges for a 292-mile connection begin at 21 cents for the first 30 seconds and 0.8 of a cent for each additional six seconds plus local-access charges. Maximum charges, for links of 4,200 miles, would be 45 cents for the first 30 seconds plus 4 cents for each additional six sec-

onds, including local-access charges.

Other features, chosen from a menu at additional cost, include authorization codes allowing special calling privileges for selected employees, call screening, network intercepts, call reporting and a gateway providing private network access using seven digits rather than 11 digits.

AT&T is located at 295 N. Maple Ave., Basking Ridge, N.J.

# AT&T sets net service | Networking tools steal show



# By Paul Korzeniowski CW Staff

ATLANTA - Networking product debuts stole the show at Interface '85 here last week

Associates, Inc. Proteon introduced Pronet-80, a token-passing, star network that connects up to 240 Digital Equipment Corp. Unibus or Intel Corp. Multibus processors. Processors can be connected through shielded twisted-pair or fiber-optic

The product, which features a transmission speed of 80M bit/sec, could be used as a backbone for several localarea networks, a high-speed graphics data transmitter or a host-to-host transmission system, the vendor said.

#### **Problem detection scheme**

The network is software compatible with Proteon's Pronet-10, a 10M bit/sec network. Pronet-80 features a detection

that bypasses a failed node.

The product's error-detection scheme corrects parity errors. It inserts a format error message in a host interface so that by polling the network, an operator can determine where the error has occurred.

The network costs \$8,000 per node. Proteon is located at 4 Tech Circle, Natick, Mass. 01760.

Infotron Systems Corp. unveiled Infostream 1500, a T1 multiplexer that interfaces with the company's IS4000 matrix switch to supnetworking functions with a transmission speed of 1.544M bit/sec

The time-division multiplexer can be used in single-and dual-link point-to-point, drop-and-insert or ring configurations, according to the vendor.

With IS4000, Infostream provides a multinode net-work capable of integrating 30 multiplexers at each node. The product handles up to 128 voice/data channels.

#### Supports 24 voice channels

Infostream 1500 supports multiple-node voice multi-plexing through either Pulse Code Modulation (PCM) or Adaptive Differential Pulse Code Modulation (ADPCM).

PCM supports 24 voice channels and can be used to pass high-speed analog modem signals through a sys-ADPCM supports 44 voice channels, according to the vendor.

A vendor spokesman said that the product works with high- or low-speed data transmission. At low speeds, channels are provided for asynchronous or synchronous data transmitted at rates from 50 to 19.2K bit/

product supports asynchronous data with code structures of five, six, seven

or eight data bits and one, 11/2 or two stop bits. Up to four duplex control signals per channel be can passed through the T1.

For high-speed transmission, the product supports 56K, 112K, 224K, 448K, 672K and 768K bit/sec transmis-

Infostream 1500 is soft-ware controlled through a central console and provides remote channel monitoring. If a link fails, a user can dynamically reallocate band-width, the vendor said.

A 64-channel system costs \$45,000 and a 128 channel system sells for \$78,000. Infotron is located at Cherry Hill Industrial Center, Cher-

ry Hill, N.J. 08003. Avatar Technologies, Inc. has added MPA 6000 to its line of protocol converters. The product links up to 28 asynchronous devices to either IBM or Sperry Corp. mainframes

MPA6000 can be config-ured to support IBM Systems Network Architecture and Bisynchronous or Sperry Uniscope protocols, the vendor

#### Provides terminal emulation

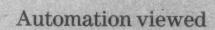
The converter supplies six asynchronous and two synchronous ports, each capable of operating at a speed of 19.2K bit/sec.

The ports can be configured to provide terminal emulation, printer mimicking or asynchronous access to a minicomputer or public data

network.

DEC, Televideo Systems,
Inc., Lear Siegler, Inc. and Hewlett-Packard Co. Ascii terminals can be used to emu-late IBM 3278 or a Sperry UTS 20 or 30 terminal. printer can mimic an IBM 3287 printer.

MPA6000 costs \$5,000. Avatar is located at 99 South St., Hopkinton, Mass. 01748.



With an eye on the future, managers are automating their operations in more creative ways. The May Special Report on Manufacturing Systems will focus on the mushrooming computer-integrated manufacturing market and the pros and cons of factory automation.

In addition, it will target micro-based material require-ments planning, robotics and vision systems. Special Report contributions are welcomed. They should

take one of two forms: a tutorial article, discussing an issue or trend, or an application story, outlining a particular user company's experience with automated manufactur-

Articles must be typed, double-spaced and range in length from four to six pages. Artwork, such as charts, graphs and photographs, is welcome.

Authors should include a brief biography and a telephone number at which they can be reached.

The deadline for submissions to the Special Report is

April 5.

If you have a story or questions, send them to Janet Fi-derio, Special Reports Editor, *Computerworld*, Box 880, 375 Cochituate Road, Framingham, Mass. 01701.



# Net management, control a growing business concern

99

Nets quickly

are becoming as

important a

strategic busi-

ness asset as the

computing re-

sources they

connect.



CW AT INTERFACE '85

ATLANTA — "The network is a key element in business today. Without it you often don't have anything to process. If your network goes flaky, you're in trouble."

That statement was made by the manager of internal communications for an East Coast telephone company, who wished to remain anonymous. He was responding to an informal survey conducted by Computerworld at Interface '85 here last week.

Networks are becoming as important a strategic business asset as the computing resources they intercona fact that is spurring a great deal of interest in network management and control, attendees said.

The strategic importance of networking seems to be growing in proportion to the growth in network - which drives interest

in net management and control.
"Networks are getting tremendously complicated, with great numbers of devices and types of devices all trying to talk together," said David Butler, manager of data communications for R. J. Reynolds Tobacco Co. in Winston-Salem, N.C.

Today, there are three main schools of thought on how to manage networks: using host-based software facilities such as IBM's Network Communications Control Facilities (NCCF): using network add-on systems such as those marketed by companies like Avant-Garde Computing, Inc. of Mount Laurel, N.J.; or using a combination of these approaches.

The problem is that today's host-

based software facilities are cumbersome, and network add-on products while user-friendly expensive, according to communications managers.

All users contacted were universal in dissatisfaction with IBM's NCCF products. "It's good software, but it needs improvement," said Dick L. Watson, data

communications manager for R. J. Reynolds Industries, parent company of R. J. Reynolds Tobacco.

"When an alert comes up, it takes expensive man-hours to go look for the actual problem," Watson said. Butler agreed. NCCF "provides

you with tons of information, but the problem is picking out the significant data. I'd like to see more graphics," Butler said.

Even applications under NCCF,

like IBM's Network Problem Determination Application (NPDA), which provides diagnostic information for remote devices, are time consuming

'NPDA is [very] menu-driven. You are constantly stepping through menus all the time," according to the telephone company communications manager.

While this type of sentiment is turn-

ing attention to network add-on devices that provide control and management functions, the price is still too high today for many users.

'Box-based solutions are expensive and hard to cost-justify," the phone company representative "How do you cost-justify equipment monitor a network that is supposed to

run efficiently anyway?" he asked.

But those prices are dropping. One user said that where it would have cost nearly \$250,000 for an add-on net management solution a few years ago, that same system can often be urchased today for \$20,000 to \$70,000.

Because of the absence of any one adequate solution, some users have taken to building their own systems that combine network control characteristics of existing hardware with homegrown network management

Data communications analysts at a petroleum corporation in the Midwest use a matrix switch manufac-tured by Dynatech Data Systems of Springfield, Va., to control their net-

The switch, which is outfitted with the Dynanet 200 alarm func-tion, sounds audible alarms when network components fail. Because it is a matrix switch, test equipment can be patched into the troubled line for testing.

For network management, however, the company uses data gathered by the switch on an in-house manage ment system it developed in Cobol. Information compiled with this management package is studied weekly.

It provides information on re-sponse times, failure rates and even histories outlining vendor response time to repair, among other things.
This last item is leading the com-

any to abandon use of ITT Courier Terminal Systems, Inc. terminals in favor of IBM equipment.

While approaches to net control and management differed, most managers conferred that network control is still only a form of reactive management. Network management that overlays a network control system is what is ultimately needed, enabling problems to be dealt with before they happen, users said.



Users discussed the value of nets at Interface '85.

# SHORTAGE from page 1

50-person communications staff.

When Clifton looked outside the company, he found fierce competi-tion. "More and more companies are competing for the few available employees," he noted.

The Canadian manager added, "It is almost impossible for a data processing department manager in a ruarea to find communications workers.

Smaller companies seem more able to meet their communications personnel needs. Don Kute, data processing manager at Magnavox in Fort Worth, Texas, claimed, "I haven't had a problem finding communica-tions professionals. We have the people we need."

William Long, MIS director at Allen Industries, Inc. in Troy, Mich., added, "There is a lot of talk about a shortage of workers, but I don't think a shortage really exists. Managers have to learn to use their resources [effectively].

"Vendors can be an excellent resource. They can help a manager stay abreast of the communications market and can supply a clear under-standing of different choices," Long

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# Dema Service Bureau Directory out

STAMFORD, Conn. - The Data Management (Dema) has published its 1985 Dema Service Bureau Directory listing data entry service bureaus by size, equipment and services.

The directory lists service bureaus alphabetically and geographically

and also lists its advertisers. It was published to help answer the questions posed to the organization by firms seeking the aid of service bureaus, a Dema executive said

The directory costs \$24.95 and is available from Dema, P.O. Box 16711, Stamford, Conn. 06905.

# Codex, Case Rixon unveil central site net control wares



ATLANTA — Capitalizing on the confusion created by the AT&T divestiture and the escalating need to manage networks better, two compaintroduced products here last week at the Interface '85 communications conference that are designed to allow central site control and management of networks.

Codex Corp. of Mansfield, Mass., announced a system for managing and controlling networks and Case Rixon Communications, Inc., of Silver Spring, Md., announced a product aimed at users of mid-range and smaller nets.

The Codex 4800 series, including Models 4850 and 4860, can centrally control networks with up to 756 lines, the company reported. Major system components in-32-bit Data General Corp. MV8000 minicomputer- and microprocessor-based line support modules called Distributed Network Processors (DNP). Each DNP can support up to 124 lines

The 4850 comes with 2M bytes of main memory and 50M bytes of disk storage and can support up to four DNPs. The high-end 4860 comes with 4M bytes of main memory and 73M bytes of disk storage and can support up to six DNPs. Both models also support Network Control Terminals — up to six on the 4850 and 10 on the 4860

 and multiple printers.
 Network control functions include the monitoring and testing of local and remote modems and facilities, including point-to-point and multipoint lines. The 4800 series can reportedly be used with Codex modems as well as diagnostic modems from other manufacturers. diagnostic modems can be accommodated with wraparound devices that tap the line on the analog and digital side of the modem.

#### Network condition monitoring

Network conditions are monitored using a 150 bit/sec out-band signaling tech-nique. When user-defined operation thresholds are exceeded, an audible alarm is sounded and the alert is logged onto a system terminal as well as printed locally. The menu-driven system enables users to perform a number of analog and digital tests, Codex said.

Additionally, the 4800 series enables the user to re-configure the network from the central site by lowering modem transmission speeds or swapping in hot standby components.

To help work the data collected in network control into reports that can be used in network management, the company also announced Co-Management Applica-

tions (CMA) software. CMA features are said to include equipment management reports, an inventory file system; problem management reports, a trouble-ticket system that provides on-line access to problem histories; and alarm management re-

ports, which can be used to perform analysis on alarms.

Available 90 days after receipt of order, the 4850 costs \$84,400, and the 4860 costs \$156,400. CMA costs \$2,000.

#### Small nets targeted

Case Rixon's Series 5000 network management products announced here include the Case 5200, a system targeted at smaller networks.

The Case 5200 is based on a 32-bit central site control-ler that performs diagnostic tests by interacting with probes installed in the net-work. These probes include diagnostic cards for modems, wraparound units for nondiagnostic modems and network control and management modules for Case DCX multiplexer and switching products, Case Rixon said.

The 5200, which is administered from a color graphics display, is said to provide trouble ticketing and have the ability to set up and test remote locations from the central control site.

The 5200, which supports 0.5M to 2M bytes of main memory and 10M to 80M bytes of disk storage, can reportedly support up to 240 lines, monitor a maximum of 2,000 devices and support a total of four operator consoles and two printers. Diagnostic tests supported include testing at the digital interface between terminals and modems and end-to-end bit error-rate tests.

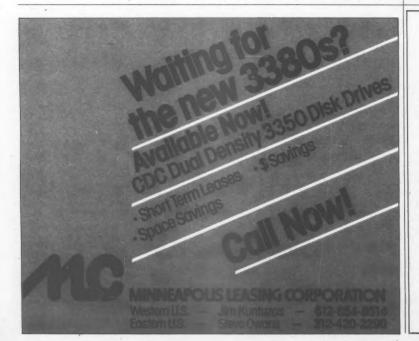
Case also announced the Case 4000 series of diagnostic modems. The synchronous modems operate at 4.8K, 9.6K and 14.2K bit/sec over dedicated lines and offer switched line fallback.

The modem series features a touch-sensitive front panel for configuring, testing and for performing low-level diagnostics of remote modems, the company reported. The modems can be used in pointto-point or multipoint config-urations. Sideband or outband signaling at 75 bit/sec is used for diagnostics with the 4000 series and the 5200. monitor nondiagnostic modems, Case offers wrap-around devices that use inband signaling.
The Case 5200 will be

available in June for \$12,000 to \$50,000, depending on memory and disk storage re-quired. The 4000 series modems, available in April, cost \$1,995 for the 4.8K bit/sec, \$2,995 for the 9.6K bit/sec and \$7,995 for the 14.2K bit/ sec. The diagnostic card option costs \$995. The wraparound devices cost \$450.

Multiplexer cards for the modems, which enable a modem to be configured with a combination of ports, will cost \$695 to \$1,295, depending on whether it is a two-, four- or six-port model.





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When a terminal,

modem or line

fails, business is

dead in the water.

# Management system pilots Delta's nationwide net



CW AT INTERFACE '85

By John Dix

ATLANTA — Delta Air Lines, Inc. has installed what may be the largest central site network control and management system in use today at its headquarters here.

The system is used to control and manage the airline's nationwide network, which includes 400 leased lines and more than 3,000 modems, according to Paul Cornwell, a Delta communications data analyst who spoke at a press briefing sponsored by Delta and Codex Corp. at the Interface '85 communications conference.

Delta is not only the first and largest user of Codex's newly announced 4800 network management and control system, it also cooperated in the system's design.

Network uptime is a serious concern in the airline industry, where reservation systems like Delta's might handle 11 million messages a day. Delta's reservation system includes, among other things, three IBM 9083s and seven IBM 3705 communications processors.

Travel agents and other ticketing establishments are supported with multidropped, 4.8K bit/sec leased lines, each of which supports 10 to 12 sites, Cornwell said. Additionally, 11 IBM Series/1 minicomputers are strategically located throughout the country and are used as remote concentrators. Each Series/1 is supported from Atlanta

ed from Atlanta with two 9.6K bit/sec leased lines. The Series/1s support 16 multi-dropped lines that, in turn, support roughly 12 sites each. One Series/1, for example, can support up to 192 sites.

The network uses the airline industry standard Programmed Airline Reservation System (Pars) protocol, which is a 6-bit protocol designed for the transaction-intensive reservation application

#### Dead in the water

Pars or no Pars, when a terminal, modem or line fails, you are dead in the water, Cornwall said. To minize downtime from such failures, Delta does all of its own maintenance on network terminal and communica-

tions equipment, he said.

To aid its maintenance efforts, Delta installed a Codex DNCS 300 Distributed Network Control System in 1982. At about the time of that system's purchase, however, the airline industry was deregulated, and Delta launched an aggressive marketing program to place travel agent terminals, Cornwell

said. This served to increase network requirements at one point 38 travel agent terminals per week were being installed and soon made the DNCS 300 obso-Cornwell lete. said

"We needed a system that would be capable of handling rapid growth and future expansion," the analyst explained. Additionally, it was important that the system provide a user-friendly human interface that would simplify and expedite control of a network that was constantly growing in size and complexity.

No commercially available products fit the bill, Cornwell said, so the airline decided to work with Codex to help in the development of what is now the Codex 4800.

Delta's 4860, the high-end system in Codex's 4800 series, is configured with 4M bytes of main memory and

1G byte of hard disk storage — a capacity that is needed to log up to 2,000 alarms per hour. Several distributed network processors are used to provide the needed line capacity.

All trouble calls are registered with a preliminary group of attendants who determine if the problems are valid. If they are, a trouble ticket is opened, preliminary checks are performed, and corrective action is initiated. Cornwell said.

#### More extensive testing

If needed, the trouble ticket is passed to diagnostic attendants who, along with the maintenance technician group, perform more extensive testing and monitoring.

The first thing operators reportedly check when troubles occur is the circuit status and the status of the signals between the remote modem and its attached terminal. This is achieved by pushing a single function key.

Use of other function keys reportedly enables the operator to tell if the remote terminal's power is on and if it is receiving good data. If that is the case, further tests can be initiated, including poll testing, line testing and device testing, according to Cornwell

Ideally, the network management and control center will enable system attendants to observe alarm information and rectify problems before users detect problems, he concluded.

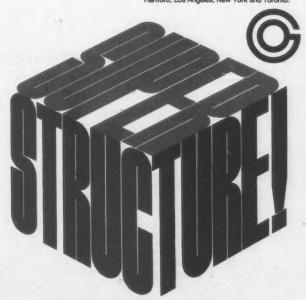
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# Consultant predicts demise of micro-mainframe link



By Bryan Wilkins CW Washington Bureau

WASHINGTON, D.C. — In the next few years, microcomputer users will have mainframe software capabilities to replace current micro-mainframe link technology, a consultant predicted.

John McQuillan, a Cambridge, Mass., consul-

John McQuillan, a Cambridge, Mass., consultant, told attendees at the Federal Office Systems Expo (Fose) here that links between micros and mainframes, commonly seen in such products as the IBM 3270, 3278 and 3274, "at best have only a few more years left."

McQuillan argued that minicomputers are assuming an important place in the hierarchy of enduser computing, serving as key links between the mainframe and the micro user. Software now under development will reside on minis to help end users negotiate their way through mainframe data bases, retrieve the data needed and transport it to the micro, where it can be transparently adapted to micro speadsheet packages such as Lotus Development.

opment Corp.'s 1-2-3, he added.

McQuillan said that current methods of sharing data between micros and mainframes work adequately, but he listed numerous disadvantages, including limited throughputs, response time delays, inaccurate and incomplete conversion from mainframe formats to micro formats and the obsolesence of the technology.

#### Looking for permanent solutions

For example, protocol converters are becoming integrated with end-user micros or are built into local-area network servers rather than existing as stand-alone devices for each terminal. While the costs of protocol converters can be a big advantage, users are looking for more permanent solutions. McQuillan said.

IBM 3274 emulation packages, which can link up to 12 micros that then appear as IBM 3278s to the mainframe, have advantages in that the software routines to the mainframe are easily accessible. However, each terminal must be hard-wired to the mainframe, there is little sharing of resources, such as modems, and the cost per connection averages \$2,500 per micro.

Terminal emulation packages are the most popular way to enable micros and mainframes to share

data resources, McQuillan said, and are cost-effective, averaging about \$1,200 per micro. But this micro-mainframe solution requires both hardware and software add-ons to the micro and depends on coaxial cable for transmission, which is expensive to install.

A mainframe software system that permits micros to access information is the next evolutionary step, he predicted. However, available products that perform as advertised are few and far between, McQuillan said. Different mainframes use different data base constructions, such as request syntaxes and dictionary formats, and use different micro download links.

McQuillan, however, believes the majority of independent mainframe software companies are trying to produce packages that will enable end-user integration into the mainframe system with their micros. The common functions of their packages consist of converting between Ascii and Ebcdic formats, converting between flat files and structured data, linking the mainframe data base management system to the micro spreadsheet, canning responses for command sequences, automating a series of steps, constructing menu-based queries and securing passwords at both the mainframe and micro level.

# HP introduces networking products for HP 3000 minis



By Paul Korzeniowski CW Staff

ATLANTA — Hewlett-Packard Co. unveiled at Interface '85 here last week three networking products that run on HP's 3000 line of minicomputers: an Ethernet local-area network, an IBM 3270 emulation package and network services software.

The local-area network package, HP LAN/3000 Link, contains the hardware and software needed to connect an HP minicomputer to an Ethernet network and is a full implementation of an Ethernet carriersense multiple access with collision detection baseband network, according to the vendor.

Each mini on the network requires only one connection, and LAN/3000 Link connects up to 100 HP minicomputers. This capability eliminates the need for point-to-point connection schemes, the vendor said.

The product includes node management software, a screen-driven system of utilities that allows users to configure new network nodes. The network transfers data at a speed of 10M bit/sec.

The IBM 3270 emulation software, HP Systems Network Architecture

Interactive Mainframe Facility (HP SNA IMF), permits HP 3000 users to access IBM 3270 series applications through IBM's SNA. The product works with HP's SNA Link, which provides the physical connection to a mainframe. HP SNA IMF enables an HP 3000 series minicomputer to emulate an IBM 3274 or 3276 control unit and provides emulation of physical unit Types 2 or logical unit Types 2 and 3 devices. For example, with HP SNA IMF, terminals or printers can mimic IBM 3278 terminals or 3287 printers. HP SNA IMF supports up to 64 devices, according to the vendor. The network services software,

The network services software, HP Network Services 3000, allows a user to access remotely a number of services, including files, peripherals, process management facilities and data bases. A file transfer facility moves files between systems.

moves files between systems. A LAN/3000 Link, including software, firmware, digital controller, transceiver and cables, costs \$5,000 for HP 3000 Models 39, 40, 42, 44 and 48. The price is \$6,000 for 3000 series Models 64 and 68.

SNA IMF costs \$6,000 for one license and \$3,000 for each subsequent license, except for the HP 3000 Model 39 version, which costs \$3,500 for one license and \$1,750 for each additional license.

HP Network Services 3000 package costs \$4,000 for one license and \$2,000 for additional licenses when purchased for HP 3000 Models 39, 40, 44, and 48. For Models 64 and 68, the cost is \$5,000 for one license and \$2,500 for additional licenses.

Hewlett Packard is located at 3000 Hanover St., Palo Alto, Calif. 94304.

# PROFESSIONALISM IS A COMMITMENT CERTIFICATION IS THE TEST

The Institute for Certification of Computer Professionals (ICCP) has scheduled the first of two 1985 sittings for the Certificate in Data Processing (CDP) and Certificate in Computer Programming (CCP) for May 11, 1985, at test centers throughout the world.

The CDP Examination is designed for business-oriented DP practitioners at the management or supervisory level. The CCP Examination for experienced programmers is constructed so that each area of specialization—business, scientific, systems programming—includes live general computer programming

sections and a sixth section in candidate's area. Application deadline is **April 6**, **1985** for May 11, 1985 exams. **NOTICE**This is the last year you can sit for the CDP and CCP without recertifying. In 1986, successful

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# ICCA meeting slated for May

ST. LOUIS — The Independent Computer Consultants Association, (ICCA) will hold its Interconnections '85 conference on May 15-17 at the Bonaventure Hotel in Los Angeles.

The topic of the conference is "Consulting: A Business and a Profession." The feafured speaker will be Kerry Johnson, an industrial psychologist and consultant to Fortune 500 companies.

Registration is \$195 for ICCA members and \$165 for each additional member from the same group or company. Registration for nonmembers is \$295 and \$265 for additional attendees from the same group or company. Those registering before April 25 will receive a \$25 deduction.

ICCA can be reached through P.O. Box 27412, St. Louis, Mo. 63141.

# Speakers say computerization eroding privacy rights



CW AT

By Mitch Betts CW Washington Bureau

WASHINGTON, D.C. - The U.S. is losing its battle against the invasion of privacy in

the computer age, according to speakers at last week's Federal Office Systems

Expo (Fose) here.

Robert Ellis Smith, publisher of the "Privacy Journal" newsletter here, told about two dozen attendees at Fose's "Technology and Privacy" session that citizens have lost the "first one-and-a-half rounds" in the privacy battle be-cause large data bases of private information have already been created, and Trilling they are being shared between the public and private sectors without the consent of the individuals the information involves.

For example, Smith noted, credit bureau information is being shared by federal agencies to collect overdue federal loans and bills, an activity that was authorized by the Debt Collection Act of

Another privacy problem is the electronic monitoring of employees in automated offices, Smith sald. He cited a recent study by Columbia Universi-ty professor Alan J. Westin that found only onethird of the organizations studied had fair monitoring standards that avoided employee feelings of "Big Brother surveillance" [CW, Dec. 24].

Washington, D.C., attorney Barry J. Trilling said that computer "hacking" crimes pose an alarming threat to privacy, for example, when hospital records are accessed or sensitive information kept in data bases is released to the public.

Commenting on the recent allegations that San Francisco police had access to the city public defender's confidential computer files [CW, Feb. 25], Trilling said, "You couldn't have a more serious violation of privacy for a defense attor-

The good news, Smith said, is that the U.S. Congress is taking some steps to protect privacy. Laws that forbid illegally accessing the federal goverment's computers and that prohibit operators of two-way CATV systems from disclosing information about subscribers were enacted last year.

In addition, Smith predicted that Congress may pass legislation this year to punish unauthorized



access to electronic mail and data communications. Smith noted that there also is talk of broadening the scope of the 1984 computer crime law ICW. Oct. 15] to cover private-sector computers, but he doubted that Congress would reopen that issue so soon.

"Usually, once Congress tack-les an issue like that, it doesn't do so again for a few years,

Smith said.

Trilling asserted that many privacy concerns cannot be legislated away but require ethical, educational and technological solu-tions. "In defense of the Congress, it is on top of this issue as much as it is on top of any other issue," said another session speaker, Benjamin I. Berman, attorney-advisor to the secretary of the Federal Trade Commission.

# Pay cut proposal undermining morale in federal DP shops

By Mitch Betts CW Washington Bureau

WASHINGTON, D.C. Morale has hit rock bottom in the data processing offices of U.S. agencies principally because of a Reagan administration proposal to cut federal salaries by 5%, according to several DP workers interviewed at the Federal Office

Systems Expo here last week. "Morale is the lowest it's ever been," said Tyna Coles, an office automation specialist at the U.S. Department of Labor. "You don't get any respect anymore, from the top

the chief executive down," she said, adding that many federal employ ees are looking for work in the private sector.

Coles and others said it appears that the govern-ment work force is being asked to make a greater sacrifice than other sectors of the economy in an effort to cut the federal Josephs budget.

"The timing was bad. The country's not in desperate straits — the proposal would have gone over bet-

ter during the 1982 recession — and we're in the midst of a military buildup," Coles said.

The Reagan administration's fiscal 1986 budget asks for a 5% pay cut or the alternative - the firing of 125,000 government workers to produce the same budget savings. The U.S. Office of Personnel Coles Management recently stat-

ed that government workers are overpaid, citing a study that said the annual "quit rate" for federal workers is 3.8%, compared with 13% in private industry.

Joseph Myers, an evaluator for the U.S. General Accounting Office, said the Reagan proposal is not likely to be approved by the U.S. Congress but rather is viewed as a ploy to get Congress to accept a pay freeze for federal workers. "Either way, it hurts mohe said.

D. E. Josephs, a member of the radio frequency management staff at the U.S. Department of the Treasury,

said the federal work force should not be the scapegoat for the federal deficit. "We don't mind taking a 5% cut if every one else does, too. But when other workers are getting 8%,

9% or 15% raises, it makes it a bit difficult to digest," he said. Josephs said he generally supports the Reagan administration's budget-

cutting efforts, and he hopes for a pay freeze. "No one in government does it for the money, anyway. There's a certain amount of patriotism to working for the government," he said. Stephen G. Fox, computer

equipment analyst for the U.S. Department of State. said he finds government work challenging, reward-ing and secure. But he acknowledged that a pay cut

would reduce morale and prompt high-level DP employees to leave for the private sector. "Low-level em-

ployees don't have the leverage, such as [postgraduatel education, to leave the government," he said. Fletcher V. Martin, a computer specialist for the U.S. Department of Agriculture, agreed. notch people are leaving the government and going to private industry," he said, which leaves less experienced DP workers in

government service.

Martin said he is particularly upset that the Reagan administration has proposed raising the age for full retirement benefits from 55 to 65.

If Congress approves that change, Martin said, he would have to work 10 more years to retire, ruining his postretirement plans to teach computer science

"It's a broken promise," Martin

said of the proposal.

For many years, Martin said, the policy has been that federal workers can retire on full benefits (56% of salary) at age 55 with 30 years' service. Under the new plan, employees could still retire early but would have to take a 5% annuity reduction for each year they are under age 65. Workers who are 55 or older at the time of enactment of the legislation would continue under the present system.



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#### Nata lodges complaint over restricted PBX use

WASHINGTON, D.C. - The North American Telecommunications Asso-ciation (Nata) last week charged Southwestern Bell Telephone Co. and Southern Bell Telephone Co. with unlawfully prohibiting, restricting and discriminating against customers who want to share the common use of private branch exchange (PBX) communications equipment that performs functions such as least-cost routing, call forwarding and localarea networking.

Nata, which represents 700 ven-dors of the telephone interconnect industry, charged that both Southern Bell and Southwestern Bell have tariffs preventing the connection of shared tenant service equipment to the local exchange and asked the Federal Communications Commission to intervene and order the tariffs struck down.

The Nata complaint cited as examples tariffs by Southwestern Bell on file in Arkansas that defined the shared and common use of customer premises equipment (CPE) as the provision of local exchange service and that "severely restricted the subscriber's right to interconnect and use its [own] CPE."

In South Carolina, Nata said tar-

iffs on file by Southern Bell give the telephone company "sole discretion over when and where subscribers will be allowed to use their CPE in shared and common use configura-

Additionally, Nata said Southern Bell tariffs can "unreasonably and discriminatorily refuse service to any subscriber and provide no objective basis for the exercise of Southern Bell's discretion to deny interconnection.

According to Nata, the FCC had jurisdiction over the tariffs. Even though all CPE has been deregulated by the commission, the restrictions on shared and common use CPE "substantially affect the interstate telecommunications system," Nata said.

It also argued that competition in the CPE market was being restricted and bundling of local exchange service was occurring, with users being forced to acquire redundant local exchange service.

## Fiber-optic system pending State Department approval

WASHINGTON, D.C. — The Federal Communications Commission said it is prepared to favor the construction of a privately operated fiber-op-tic submarine cable system in the North Atlantic, providing the policy obtains the approval of the U.S. State Department.

Two applications by private concerns, Tel-Optik Ltd. and Submarine Lightwave Cable Co. (SLC) requested permission to establish landing spots in the U.S. The FCC said the Tel-Optik application contained the information necessary to link North America to England, while the appli-cation of SLC to link the U.S. to Europe was insufficient.

The two firms said they intend to sell or lease blocks of transmission capacity and therefore would not qualify as common carriers for tariff regulation. The FCC officials noted the impact that private cable systems might have on the International Telecommunications Satellite Organization satellite consortium.

### FCC asks local Bell firms to refile special access

WASHINGTON, D.C. — The Federal Communications Commission ordered local telephone companies to refile their special access tariffs by March 15 (to go into effect April 1), to reflect an overall 7% reduction in exchange rates that were set too high in some instances by some Bell telephone companies. In other cases, special access rates were filed that were probably too low, the FCC said.

Observers predicted that the longdistance carriers whose connection costs to the local exchanges will go up with the implementation of spe-cial access will most likely take their case to the courts to halt the effective date.

AT&T Communications deferred the March 4 effective date of its own planned private line rate restructuring to reflect the new April 1 imple-mentation of special access charges by the local telephone companies. AT&T Communications asked the FCC to let the tariffs go into effect March 19.

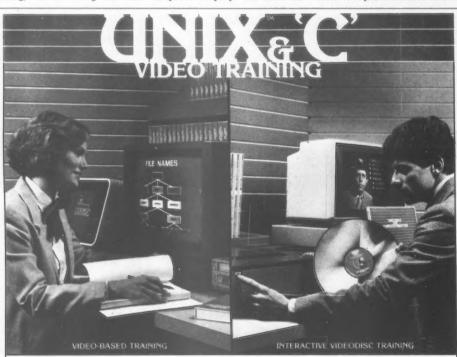
# **Education group** open to DPMA

PARK RIDGE, Ill. - The Special Interest Group for Education (Edsig) recently became affiliated with the Data Processing Management Asssociation (DPMA) International.

Edsig was reportedly formed to gather data on information systems education techniques and topics and to promote the development of the DPMA Model Curriculum for Computer Information Systems Undergraduate Education, a spokesman said.

Details on the Edsig are available

from Georgia Miller, Assistant Dean, School of Business, Indiana University, 801 W. Michigan St., Indianapolis, Ind. 46223.



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# NETWORKING from page 1

Physically interconnecting microcomputers is not the problem. Typically, a board, generically referred to as a network interface unit, is installed in each computer. The network cable or wire is generally run directly from one computer network interface unit to the next. Some network interface units have integrated signaling hardware, while others use a separate outboard device, called a transceiver in baseband networks or a modem in broadband implementations.

Network companies typically specialize in supporting a single computer brand, according to Bill Driscoll of LAN(West) in Carefree, Ariz., but most at least cater to the installed base of IBM's Personal Computer. Networks, such as Corvus Systems, Inc.'s Omninet, that support different types of micros typically require the machines to have similar operating systems.

operating systems.

Whether networking homogeneous or heterogenous machines, wiring them together is the easy

Configuring the machines with the proper software and enabling each station to share network resources and exchange data is where the fun begins. According to Dave Ferris, chairman of Ferrin Corp., a San Francisco-based personal computer services company, maintaining micro nets involves embracing "traditional systems issues that any minicomputer manager would be aware of."

These often-overlooked issues end up requiring inordinate amounts of personnel time — a major hidden cost. Ferris said flatly, "Someone will have to administer the network," an ongoing job that includes the design of security environments, management of user identification, definition of file structures and time spent tweaking the network to keep it running properly.

keep it running properly.

It is for this reason that Ferris advises users to think twice about micro nets if all they are interested in is sharing peripherals. "If you're talking about sharing \$15,000 worth of peripherals, it may make sense to use a local net," he said. "Otherwise, we recommend avoiding them and pursuing cruder solutions." Sharing a laser printer, for example, can be done simply by swapping diskettes from one machine to another or by using a data switch.

# Micro nets facilitate data sharing

Micro networks come into play in sharing secondary storage and information. Secondary storage can be a stand-alone, network-specific hard disk to which all the micros are attached, like Corvus Systems, Inc.'s Omnidrive line or Nestar Systems, Inc.'s Plan 3000 and 4000, or an integral hard disk in an attached micro that can be shared with other processors. For example, Corvus' Omnishare enables networked machines to access up to 20M bytes of the hard disk on an IBM Personal Commuter XT.

A microcomputer with an internal hard disk can be set up as a dedicated server and do nothing but maintain disk I/O for other network nodes or be configured in a nondedicated mode and still be used as a workstation. Because the sole purpose

of dedicated servers is to locate and retrieve information on the disk, they typically allow greater network performance than nondedicated server implementations, according to Eric H. Killorin, president of market research firm Hyatt Research Corp. in Andover, Mass., and publisher of "PC Netline," an industry newsletter, and the "Executive Guide to PC Networks," a report that analyzes micro networks.

Still another variation on the theme is virtual servers. According to Hyatt's "Executive Guide to PC Networks," with products like Nestar's Plan 2000, "personal computers on the network designated as server units can have their storage and printer ports accessed by other personal com-

# Nets allow multiuser program access

# But users should be aware of vendors' lease policies

When implemented properly, microcomputer networks can do away with both the need to load the operating system from a diskette when the machine is turned on and the need to load program diskettes for each application. They also may allow a pool of users to share programs.

In operation, "When you turn on a workstation, there is an internal booting from [read-only

In operation, "When you turn on a workstation, there is an internal booting from [read-only memory] or from a local diskette that sets up connections with the network, and then you can go into further booting from a common server," said Dave Ferris, chairman of Ferrin Corp., a personal

computer services firm in San Francisco.

Once the operating system is booted, the desired application can be pulled down from a library stored on the disk of a network server.

A disk volume on a network hard disk may, for example, contain all the programs that are going to be used on the network in a shared mode, and everyone would have read/write access to that volume, according to Bill Driscoll, founder of LAN(West), a network reseller and consulting firm located in Carefree, Ariz. One copy of Micropro International Corp.'s Wordstar, for example, can be shared among multiple users.

But software sharing creates its own problems. Some software vendors do not have multiuser contracts for their products. Whereas Mi-

See SHARING page 18

# A SAMPLING OF MICROCOMPUTER NETWORKS

	Product	Maximum number of stations supported	Network speed (in bit/sec)	Access	Network topology	Media and signaling	Maximum cable length	Server implementation	Print spooling	Gateways provided	Average cost per connection
Corvus Systems, Inc. San Jose, Calif.	Omninet	63	1M	CSMA/CA	Bus	Twisted-pair	4,000 ft with active junction every 1,000 ft	Dedicated	Yes	SNA <sup>1</sup> Gateway, providing IBM 3278 terminal emulation	\$6823
BM Entry Systems Division Boca Raton, Fla.	PC Net	72; up to 1,000 with custom tuning	2M	CSMA/CD	Bus	Broadband coaxial	2,000 ft, up to 6.25 miles with custom tuning	Dedicated or handesicated	Yes	SNA 3270 emulation program	\$8543
Nestar Systems, inc. Palo Alto, Calif.	Plan 2000	500	2.5M	Token	Star	Baseband coaxial	5 miles	Dedicated or nondedicated	Yes	SNA emulation of a 3274	\$20,000 for eight to 16 stations
3Com Corp. Mountain View, Calif.	Lan/1	1,024	10M	CSMA/CD	Bus	Baseband	1.6 miles	Dedicated or numbedicated	Yes	SNA, BSC <sup>2</sup> , X.25 and asynch, providing emulation of IBM 3270 and Wang Labora- tories, Inc. VT52, VT100	\$650 <sup>3</sup>
Ungermann- Bass, Inc. Santa Clara, Calif.	Net/One	Baseband, 1,024; Broadband, 300	Baseband, 10M; broadband, 5M/channel	CSMA/CD	Bus	Baseband or broadband coaxial	Baseband, 1.75 miles; broadband, 5-mile radius	Nondedicated	Yes	TTY	\$8803
Proteon, Inc.	Pronet	255	10M	Token	Physical star/ logical ring	Shielded twisted-pair, fiber,	31.25 miles	Nondedicated	Yes	SNA, Ethernet	\$9503

1Systems Network Architecture (IBM) 2Binary Synchronous Communications (IBM) 2Based on CW estimated cost of eight-station network

# SERVER from page 17

puters while still acting as workstations."

Server implementations vary by product line, but according to Killorin, the industry trend is toward dedicated servers. In this case, dedicated does not always mean that the unit has to be a personal computer. 3Com Corp. recently announced the 3Server, a 36M-byte stand-alone server that can, by daisy-chaining disk drives, support up to 250M bytes. The 3Server also acts as a print server and can support modems for off-network communications.

More important concerns than the physical location of the disk are the level at which the server provides access to data and the way the network enables multiple users to update data contained in the same volume. Disk servers — whether they are implemented in a dedicated or nondedicated machine — permit access to volumes of files, analogous to accessing a floppy drive in a personal computer, Killorin said. File servers, on the other hand, provide direct access to files.

The advantage of file serving, according to Bill Driscoll of LAN(West) in Carefree, Ariz., is that "you have a traffic cop that is intelligent enough to eliminate the problem of users trying to update

the same record at the same time."
File servers can provide locking at
the volume level, file level and record
level, Driscoll said.
Locking is used to ensure data in-

Locking is used to ensure data integrity, particularly in networks where many users need to read and annotate the same data. For example, file locking prevents two users from simultaneously calling up the same file from a server. This prevents one user from writing his file back to the disk over a file that is being concurrently updated by another user, which would wipe out any changes made to that copy.

Considerations like data integrity are more important in micro network evaluations than crude price comparisons. According to Killorin, price should be a secondary consideration to function and perfor-

mance. "Network acquisition should be based on application needs, today's needs and the perceived needs of the next two to three years," Killorin noted. "Price should only be used to differentiate implementations that appear similar."

Acquisition itself presents a prob-

lem in large corporations in that many network products are sold, like personal computers, through retail outlets. MIS is frequently not consulted about the purchase of the network.

#### **New hurdles**

Because of this, the user may not end up with the system he wants or thought he was buying. And sprouting multiple independent micro networks presents a new hurdle for MIS. According to Kim Myhre, director of communications research at Framingham, Mass.-based International Data Corp., "Part of the challenge facing MIS is the task of integrating departmental personal computer networks."

When all is said and done, however, users who err on the side of caution may miss the boat. For users who want to share a printer and can get by with some rudimentary disk sharing, "in some cases it makes sense to pick up something quick and disty." Willion said.

dirty," Killorin said.
"It costs users a few hundred dollars per node, and they get a solution in hand immediately. It doesn't even matter if it's going to be obsolete in two years, because by then, their whole environment will have changed anyway."

# SHARING from page 17

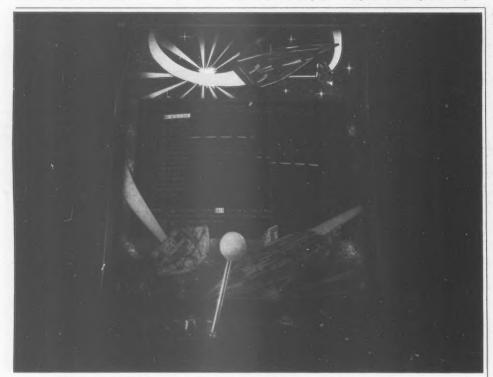
cropro International will license its Wordstar package for a given site, for example, Lotus Development Corp. requires one copy of its 1-2-3 package per machine.

A few vendors safeguard against program sharing with local networks by requiring use of boot disks. According to Driscoll, users can store a single copy of a program like Ashton-Tate's Dbase II on a hard disk, but when they execute the program, they must insert a separate boot disk with a hidden passkey in one of the workstation's floppy disk drives.

Driscoll recommends to his clients that they pay no attention to contractual stipulations that require one copy of a program for each workstation on a network, saying such stipulations would make sharing applications on a network less appealing. "I recommend that users buy a number of copies to be consistent with the largest simultaneous user base they'll have using the product at any one time," he said.

For programs that require them, boot disks can be handed from user to user as needed, which, while inconvenient, is possible given the close proximity typical of workstations in micro networks, others noted.

Software restrictions may be hindering acceptance of micro networks. "The main reason that local network acceptance has been slow is because of the lack of networking versions of powerful, commonly used applications software," said Eric H. Killorin, president of Hyatt Research Corp., a firm in Andover, Mass., that tracks the personal computer network industry.



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# FCC OKs protocol conversion for phone companies

WASHINGTON, D.C. — In a further relaxation of regulatory rules, the Federal Communications Commission will conditionally permit former Bell operating companies to perform asynchronous-to-X.25 packet-switching protocol conversion at their central office facilities.

The FCC action means that the millions of asynchronous terminals and microcomputers that are incompatible with the X.25 protocol will be able to communicate data over local telephone lines and through packet assemblers/disassemblers to be located at telephone company central offices.

The X.25 protocol has been adopted by international standards groups for formatting data into packets to be transmitted in short bursts that use a fraction of the transmission bandwidth, as opposed to conventional circuit-switched voice-grade telephone calls.

The FCC noted that the growth of data communications over the telephone network was putting pressure on circuit switches constructed to handle voice calls and that placing packet switches nearby could offer economical service

reconomical service.

The FCC action grants the requests of the American Information Technology regional holding company and the following divested Bell operating companies: Pacific Bell, Southern Bell, South Central Bell, Southwestern Bell, New Jersey Bell, Pacific Northwest Bell, New York and New England Telephone companies

The FCC waived the requirements of the Second Computer Inquiry policy on providing the enhanced service through a separate subsidiary. The companies had argued that separate

subsidiaries would duplicate existing switches and would be too costly if the companies wanted to offer the service to the public.

Companies with existing valueadded networks performing X.25
protocol conversion for customers at
their own switch sites, such as McDonnell Douglas Automation Co.'s
Tymnet division, GTE Corp.'s Telenet
subsidiary and other value-added
carriers, opposed the grant of the
waiver and lobbied the FCC heavily.
GTE Telenet President J. David

GTE Telenet President J. David Hann said following the FCC action, "GTE Telenet has not sought to impede the [divested Bell operating companies] from entering this market, but has expressed concern that

[the operating companies'] packet services must stand on their own without cross-subsidization from [operating company] monopoly revenue and without discriminatory access to underlying [divested Bell operating company] transmission facilities."

GTE Telenet urged the FCC to require the separate subsidiary provision of the service consistent with the FCC's Computer Decision II policies.

John McQuillan, a Cambridge, Mass.-based consultant in micro-tomainframe subjects, said the FCC action was "extremely significant for the future." McQuillan said the entrance of the local telephone compa-See FCC page 20

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# AT&T links its Datakit switch and DEC minis

MORRISTOWN, N.J. — AT&T Technologies said last week that it had developed a hardware link between its Datakit Virtual Circuit Switch and Digital Equipment Corp.'s PDP-11 and Vax family of computers.

The initial application for the hardware link is slated for use in internal telephone company applications where the DEC equipment is widely used, AT&T said.

The link is an interface module called the KS11-K Unibus, a micro-processor-controlled parallel bus interface. The product was developed by AT&T Technologies and will be manufactured by DEC and sold by AT&T Network Systems.

The Unibus establishes a multiplexed high-speed channel, ranging from 320K bit/sec up to 1M bit/sec. It joins the Datakit VCS interface that already links AT&T's 3B computer line.

The Datakit VCS data communications network reportedly was designed to handle large-volume communications between dissimilar
computer systems and to enable local-area networks to grow into widearea nets. An AT&T spokesman said
the agreement with DEC to manufacture the Unibus product can be seen
as part of AT&T's development of the
Universal Information Services, its
version of an Integrated Services Digital Network.

"Operations support systems are a vital part of the Universal Information Services, and our agreement with (DEC), coupled with the already integrated systems approach with our AT&T 3B line of computers, brings us another step closer to reality," said Jim Wilson, manager of product planning and marketing in data communications at AT&T Network Systems.

# DP spending focus shifting to software, study finds



CW AT IDC BRIEFING

# By Maura McEnaney CW Staff

BOSTON - MIS managers will be spending more money on off-the-shelf software this year, a survey from International Data Corp. (IDC) predicted.

The annual study on DP spending conducted by the Framingham, Mass., research firm also found that standardizing data, maintaining control over data output and providing communications capabilities among a

host of systems are some of the most important issues facing MIS managers today. Preliminary results of the survey were announced here at Directions '85, IDC's 20th Annual Information Industry Briefing Session.

'Software [expenditures growing at an incredibly rapid rate, while hardware [expenditures have] actually slowed down," according to Hank Janson, IDC's director of information systems services.

#### 'A buy decision'

Although hardware expenses historically grow 15% annually, this year the MIS managers interviewed expect only a 13% growth in hard-ware expenditures and a 30% in-

crease in software expenditures, up from approximately 25% in years past, Janson noted. Preliminary findings also indicated that more companies are buying off-the-shelf software, according to Janson. "The old make-or-buy decision is becoming [strictly] a buy decision," he said.

The emergence of departmental systems is boosting software purchases, which only increase end-user independence — a sore spot among MIS managers — Janson observed. "Frankly, software is the key to enduser independence," he said. "A number of people who I have talked to will go out and shop for software to do their jobs. After they have se lected a software product, they will ask what kind of hardware it runs The hardware is not dragging along the software, the software is pushing the hardware."

According to the survey, DP spending continues to grow but at a slower pace. Last year, IDC estimated spending reached \$99.2 billion. This year, the survey said, spending will grow 12% to \$111 billion, down from a 15% growth rate in 1983.

Communications will be the other major purchasing area for DP managers, Janson said. MIS managers said they expect to spend 25% more on communications equipment this year, the IDC survey said.

But the plethora of communica-tions options can create problems for the MIS manager, Janson noted. "He is faced with the situation that he is is faced with the situation that he is now not only the data processing manager but also the communica-tions manager," Janson said. "On one hand, he's losing authority, but he's hand, he's losing authority, by going to rise in responsibility," by providing communications among departments.

While providing the communications links to mainframe data, MIS managers are struggling to maintain control over that data, he noted.

"Program accuracy is totally out of the control of the DP manager right now," he said, adding, "If they are able to keep corporate control over the information . . . and have consistent data used throughout the organization, I think they will be applauded." Enforcing a self-checking method by end users could be one solution to that problem, Janson said. More than 40% of the respondents

said they had 100% control over the purchase of micros. However, Janson said, many in that same group said they did not have 100% control over the purchase of word processors and

some minicomputers.

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# FCC from page 19

ny into communications for data processing functions would be economical because the colocation of protocol conversion devices with central of-fice switches is advantageous. However, he predicted the ruling would have little immediate effect on inhouse micro-to-mainframe architec-

Three conditions were attached to the FCC's waivers. First, the circuits used by both the divested operating companies' central offices and exist-ing value-added networks cannot be used by the divested operating companies at lower rates. The operating companies had proposed to use them at net book cost, with the value-added networks continuing to pay a private-line rate.

Second, the FCC said the operating companies must charge differently for asynchronous-to-X.25 protocol conversion and the X.25-to-X.25 service, where no conversion is required. The FCC said a specific usage-based network rate element must be included in the carriers' tariffs for X.25-to-X.25 service that will be invoked when asynchronous-to-X.25

conversion is in progress at a port.
Third, end-user access to the conversion facility at the central office cannot be bundled with transmission rates for switching the data, and that access must be tariffed.

# Consider minis for departmental needs, analyst says



CW AT IDC BRIEFING

By Edward Warner CW Staff

BOSTON — Corporate MIS managers increasingly must consider whether to meet departmental computing needs with more personal computers or to adopt multiuser systems, including minicomputers, according to computer industry analyst Aaron Goldberg.

That question's importance, Goldberg said recently, is highlighted by the declining price of minicomputers. Like personal computers before them, he said, minis are now coming into use in corporate departments whether MIS management likes it or

Goldberg made his comments in a wide-ranging speech on the future of the microcomputer market to a group of about 300 attendees at Directions '85, International Data Corp.'s (IDC) 20th Annual Information Industry Briefing Session for information industry executives, held here early this month

#### Disguising computer purchases

Referring to a reportedly popular method for disguising personal computer purchases, Goldberg warned, "Instead of \$5,000 pieces of office furniture, you'll see \$25,000 pieces of office furniture" on departmental purchasing requests. purchasing requests.

Goldberg suggested that MIS man-agers should consider implementing departmental minis themselves, both as a means for gaining control over departmental data processing and because the minis promote a flexible approach to networking. He pointed out that minicomputers can be hardwired to a mix of both personal computers and terminals or linked to a group of personal computers via a lo-

# Net users meet set for March

ARLINGTON, Va. - The Network Users Association (NUA) will hold its spring meeting from March 27-29 here at the Stouffer Concourse Hotel, Crystal City.

Topics to be discussed include micro-mainframe user experiences, voice/data private branch exchanges, user and vendor perspec-tives on building and operating wide-area networks and a user forum on the problems and pitfalls of localarea networks.

Organizations to be represented organizations to be represented include Dow Chemical Corp., the Mitre Corp., Ford Aerospace & Communications Corp., Grumman Aerospace Corp., Harris Corp., California's Stanford University and Litton Systems Inc. tems, Inc.

The conference costs \$125 for NUA members. The nonmember registration fee is \$275.

More information is available from Diana Simmons, NUA, Suite 400, 2111 Eisenhower Ave., Alexandria, Va. 22314

cal-area network.

While acknowledging that "it is

arguable whether the networked personal computer or the shared-logic minicomputer provides more utility," Goldberg added, "The myth of [the personal computer] as panacea is not only costly but may hinder future upgrade paths."

To buttress his case for the multiuser system as an alternative, Goldberg to- Goldberg taled the costs of a system

of four networked IBM Personal Computers, including network cards and printer, and compared that with

the total cost of a multiuser Altos Computer Systems, Inc. 586 series-

based system with four terminals and a printer. The cost per user of the Personal Computer-based system would be \$3,325, he said. The multiuser system, meanwhile, would cost \$2,700 per user or \$625 less for each user.

Goldberg, IDC's director of microsystems services. also made several observations about personal computer software during his

presentation. He said he found Digital Research, Inc.'s Graphics Environment Manager, a windowing environment, far superior to IBM's new offering in that genre, Topview.

#### Retter product from independent year

But, he wondered, "Will the industry go with the better product from an independent vendor or the [worse] product from IBM?"

Goldberg also predicted a rise in the use of artificial intelligence in applications programs, including software to "prevent users from deleting all their files."

He said software incorporating Al principles would "make every user a power user," and thus address the needs of what he called the "new group of end users," those with little computer experience.

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# Police cleared of access charges

By Kathleen Sullivan CW West Coast Bureau

SAN FRANCISCO preliminary investigation by the San Francisco Police Commission has cleared the police department here of wrongdoing in the recent controversy over a breach in computer security [CW, Feb.

By late last week, no evi-

dence had been uncovered to substantiate charges that a police lieutenant used a specially designed menu to gain access to Public Defender Jeff Brown's confidential files, which are stored in a shared computer system in the city's Hall of Justice building.

Although the lieutenant admitted that he was given an access level usually granted only to system administrators to conduct an internal police probe, he has denied allegations that he read confidential files stored by other agencies. The commission is continuing its inquiry, a spokeswoman said.

The system — a Wang Laboratories, Inc. VS100 minicomputer used primarily for word processing — is op-erated by the police and shared with the public de-fender, coroner, district at-torney, sheriff and the Office of Civilian Complaints. As a result of the incident, the city is exploring ways to provide better security for its criminal justice computer system.

Last week, the Electronic Information System Priority Committee (EISPC), which oversees the city's data pro-cessing functions, forwarded a number of recommenda-tions to Mayor Dianne Feinstein for review. According to Peter Henschel, chairman of EISPC, the committee suggested that the city evaluate off-the-shelf software packages that could solve the security problem.

The committee also suggested that the city move the system's central processing unit out of the police depart-ment and into the main data processing center. EISPC recommended that the city appoint an independent system administrator to oversee the system. Finally, the committee agreed to review a recent report by the controller's office that analyzes citywide computer security concerns.

#### Off-line storage

Until final steps are taken to address the security gaps, Feinstein has told the agencies that share the system to store their confidential files off-line.

Still to be resolved are the legal issues raised by the computer security controversy. Originally, the public de-fender estimated that the prosecution of up to 1,500 cases had been affected. Last week, however, Brown said the office had exaggerated the number of cases that might be jeopardized.

As a result of the police department's actions, the public defender had asked a San Francisco court to dis-miss murder charges filed against one man, saying that the security breach had vio-lated his right to attorneyclient confidence. The judge ruled against the defense's motion.

Kathleen Lucey, a senior management systems consultant at Menlo Park, Calif.based SRI International, Inc. said the city's Wang users were "very naive" to assume that sufficient security mea-

sures were already in place.



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# Outdated MIS curricula at core of graduate drought

By Kathleen Burton CW West Coast Bureau

MENLO PARK, Calif. — According to several DP directors and MIS corporate recruiters from around the nation, there will be severe shortages of qualified MIS graduates by 1990 if university MIS departments do not update their curricula to keep pace with rapidly changing industry needs.

"Large academic institutions are very slow to change," said Jim Sutter, vice-president of information systems at Rockwell International Corp. in Seal Beach, Calif. Academia has been slow responding to several problem areas within DP curricula, Sutter said, citing a lack of telecommunications, factory automation and manufacturing courses. These, Sutter said, are fast-growing industry segments that will explode within the next five years.

University MIS departments are not giving students experience at the leading edge of technology because of a chronic lack of funds and the ongoing problem of professorial "brain drain," said Fran Hildebrand, director of MIS and management recruiting for Pacific Bell Telephone Co. in San Francisco. Because of this, Hildebrand said, "Basic computer literacy on current hardware is all we can expect from MIS graduates right now."

Hildebrand added that Pacific Bell is becoming active in the academic community because it

wants more input into the curriculum decisionmaking process. Pacific Bell's MIS employees are encouraged to teach DP courses at local junior colleges, she said, and DP professors are increasingly doing part-time consulting at Pacific Bell, supplementing their incomes and communicating Pacific Bell's needs back to the academic community. "It's a win-win situation for [all] of us," she said.

#### IBM to give \$24 million in funds, grants

MIS curricula today are not current because of shortages of teachers, equipment and R&D funds, according to John Nadin, university relations director at IBM headquarters in Armonk, N.Y. IBM is tackling the problem by awarding \$24 million next month in funds and equipment grants to 12 university MIS departments, based on each school's creative proposals for improving the management of information systems, he said.

"We hope that the best proposals will leaven the entire business school environment over time," Nadin said. IBM decided to award the grants because technical breakthroughs in networking, personal computers and high-performance software are filtering into the business world, giving future MIS managers increasingly complex decisions to make he said

A recent study by a technology education task force of 69 corporations in the Dallas area concluded that industry should increase its R&D support of universities by providing seed money, matching funds, loaned professors, endowed faculty chairs, equipment and more information about the \$5 billion available in annual government R&D grants. Otherwise, according to Michele Scott Tucker, project manager for the study at Texas Instruments, Inc., computer science departments will fall behind industry's needs by the decade's end.

Tucker said the 1984 Dallas-based Metroplex

Tucker said the 1984 Dallas-based Metroplex study found that increasing R&D grants to universities will help attract talented MIS and computer science professionals to teaching by alleviating the lure of corporate salaries that often run to six figures. Tucker said Ti designates approximately 1% of its annual budget (\$4 million) to university R&D projects.

The lack of sufficient numbers of qualified entry-level MIS graduates in the Dallas-Fort Worth area exists because students are being siphoned off by start-up companies and because there are not enough MIS teachers to keep sufficient numbers of new graduates in the pipeline, said John V. Roach, chairman and chief executive officer of Tandy Corp. in Fort Worth. To alleviate the problem, Roach said, industry and government agencies must pool their resources, designating additional funds to university R&D and attracting more top-level graduates to enter academia.

# Universities in losing struggle to stay timely with DP

By Kathleen Burton CW West Coast Bureau

University MIS professors and department chairmen around the nation attribute the MIS curriculum's lack of timeliness and breadth to administrative lassitude and a chronic lack of space, funds and qualified teachers.

C. Medley, chairman of the Computer Information Systems Department at California Polytechnic State University at Pomona, Calif., said today's MIS requirements are outmoded five years by the time graduates enter the work force. There is a curriculum timeliness problem, Medley said, because curriculum changes suggested today must go through a rigorous university approval cycle before they are implemented in the classroom.

Medley said today's curriculum changes won't get into the curriculum catalog until 1986, and students affected by the changes won't graduate and enter the work force until 1990. "By then, you're looking at a five-year lag time," Medley said, "and the changes will be out of date."

Medley said his department is prevented from expanding MIS courses by insufficient funding from the state of California. Medley

said his department's annual budget, excluding faculty salaries, is \$23,000, supplemented by private industry grants totaling \$100,000 to \$200,000 a year. Today's MIS curricula are

Today's MIS curricula are out of date because it takes about five years between the time MIS requirements are voiced and their subsequent implementation at the university level, said Gordon Davis, a Honeywell, Inc. Honeywell professor of MIS at the University of Minnesota at Minneapolis St. Paul. Davis attributed the delay to the long (three-year) publishing cycle for new DP textbooks and the university's failure to recognize changes in the MIS "real world."

Mark Garman, associate dean for the School of Business Administration at the University of California at Berkeley, said his department lacks microcomputers, equipment and space, all necessary components to bring MIS classes into the business school mainstream at Berkeley. Approximately 100 business school students now use one microcomputer, Garman said, rather than the acceptable five-to-one ratio standard at most schools.

Garman said Berkeley's business school recently had to turn down 10 personal computers because there was no space to put them. "It's a vicious circle," Garman said. "We can't get off the ground this way. Maybe students should be required to buy their own [micros as they would] textbooks."

would textbooks."

Jeffrey Moore, assistant dean of computing at the Stanford University Busi-

ness School, said his department is being pressured by industry to increase personal computer literacy among Stanford's MIS-oriented master's in business administration students. Moore said Stanford has not reacted to this need yet because "[personal computer] literacy is a management education vs. a vocational training issue."

#### 'Basic computer literacy'

With space, mainframe capacity, micro and staff support so tight, Moore said, "We feel we can only afford to teach our [graduate students] basic computer literacy." Moore said that because master's degree students are only in the program two years, the school's philosophy has been to concentrate on other business areas besides MIS and DP.

Over the last two years, Moore said, Apple Computer, Inc., IBM, Digital Equipment Corp. and Hewlett-Packard Co. have made "aggressive" offers to donate personal computers, but there is no space or staff to teach students how to use them.

Ilker Baybars, associate dean for the business school at Carnegie-Mellon University in Pittsburgh, said that although the university is well funded, private and research rich, his department still faces serious financial problems and a chronic shortage of teachers. In spite of this, Baybars said, Carnegie-Mellon tries to keep pace with changing MIS environments.

To remain current, the university's business school will introduce several new See SCHOOL page 27



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# Colleges having trouble retaining entry-level MIS faculty

Because of competitive industry salaries, obsolete hardware and soft-ware at universities and dwindling research money, there are five tim as many openings for teachers in MIS business schools today than people to fill them, said Gordon Davis, Hon-eywell professor of MIS at the Uni-versity of Minnesota at Minneapolis St. Paul.

According to Davis, the problem is that DP and business undergraduates, lured by high salaries and other perks, are being siphoned off by in-dustry before they can begin gradu-ate study. Universities are conseate study. Universities are consequently unable to recruit sufficient doctorate recipients to fill entry-level teaching positions, he said. "In ef-fect, we're eating our seed corn."

According to Davis, other incentives besides salary make teaching an attractive profession, however. "Professors are a different breed," Davis said. "They become teachers because they love research and teaching, not because they want to get rich.'

#### Love of profession

Davis said that because of this love, the University of Minnesota's MIS department can still attract qualified assistant professors, despite the university's scant \$300,000 research budget and its \$35,000 to \$60,000 average faculty salary, which is not competitive by industry standards.

Minnesota offers a five-week MIS certification program that qualifies professionals in related fields to teach MIS courses at the university level - a solution that, if widely implemented, could solve the teacher shortage, Davis said. The certification program, sponsored by the American Assembly of Collegiate Schools of Business, boasts approximately 100 graduates in the two years it has been operating, Davis

Wally Wadycki, acting head of the quantitative methods department at the University of Illinois at Chicago, said, "It's very difficult to hold MIS [faculty] who are beseiged with of-

#### incentives other than salary

With a starting entry-level salary of \$35,000 for a nine-month teaching contract for those with a doctoral degree, and with only \$100,000 in research grants offered annually by the MIS department, Wadycki said the University of Illinois was forced to add other incentives to attract teachers. For example, in their first summer of teaching, MIS professors now receive a private research stipend.

In addition, all full-time faculty members now have access to networked terminals on their desks, and the department will reduce the

# SCHOOL from page 26

MIS courses over the next two years that will focus on such areas as expert systems, manufacturing cost ac-counting and computer-aided design and manufacturing. The course changes resulted from industry feed-back through Carnegie-Mellon's Business Advisory Council, an industry liaison. Baybars said.

'People who teach must make fundamental decisions about . . . the [kind of] things, like higher salaries, they're willing to give up.'

— Randy Gerard University of California at Berkeley

DP teaching load for the upcoming year from six to five courses, allowing professors more time for research and consultation.

The teacher turnover in the MIS department at the University of California at Berkeley is an acute prob-lem, said Randy Gerard, MIS director at the university. A state-funded institution, the University of California at Berkeley cannot compete with the industry either in competitive salaries or research budgets, Gerard

Faculty salaries at the university range only from \$31,800 to \$70,000.

However, "teaching is a lifestyle. People who teach must make fundamental decisions about the kind of lives they want to lead and the [kind of], things, like higher salaries, they're willing to give up," Gerard

The situation will improve slightly in 1985, Gerard predicted, because California Gov. George Deukmejian recently increased the budget for faculty salaries and for instructional use of computers by students.

Gerard said the difficulty in keeping talented teachers is not unique to MIS but plagues other areas like engineering, computer science and bioen-



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Mark is CEO and president of NCA Corporation, a leading software developer and marketing company that's helping manufacturers stay competitive with a manufacturing resource planning (MRP II) system called MAXCIM.™

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whether it's stored across the plant or at a plant across the country.

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"Our customers have found that this is the ideal solution for them. With this kind of success," Mark concludes, "we'll never second-guess

# Micros, minis keep maple syrup production flowing

By Donna Raimondi CW Staff

ST. ALBANS, Vt. — When the night temperature slides to 20 degrees Fahrenheit and the day temperature warms up to 40 degrees Fahrenheit, sap flows from the sugar maple trees here and is soon boiled down to make Vermont maple syrup. At each step of the sugaring process, micro- and minicomputers aid the producers and distributors who move the syrup from vats to the nation's pancakes.

George Dunsmore of Sunset View Farm in St. Albans — a former Vermont commissioner of agriculture has 600 acres of farmland. Dunsmore uses an IBM Personal Computer to track the business end of his farm, he said. His business includes 3,000 taps (buckets on the maple trees) that produce 800 to 1,000 gallons of maple syrup a year, he said. "I use the [Personal Computer] for payroll, profit and loss, depreciation scheduling — all of my finances," he added.

For many farmers, maple syrup is an enterprise that is conducted in addition to other businesses, Dunsmore said, and the personal computer is a good management tool for such farming practices. Dunsmore, for instance, milks 60 cows and farms half of his 600 acres — the remaining half is rented to other farmers — in addition to his sugaring operation, he

Sunset View Farm has seen many changes in maple production since its beginnings in the 19th century, Dunsmore said, with much of the change occurring in the last five years. Because maple producers now market their product at food shows around the world, demand for maple products has caused rapid growth in the methodology and business of producing syrup, he said.

The methodology of extracting sap and producing syrup had changed little until recently, Dunsmore said. Buckets in the sugar bush (an orchard of sugar maples) are being replaced with plastic tubing and vacuum pumps; the tractor has preempted the horse-drawn wagon, and fossil fuels are used more widely than wood under the evaporators, he said.

Many producers sell 30-gallon barrels of their finished syrup to larger companies, such as American Maple Products Corp. and Maple Grove Farms of Vermont, he said. Roger Ames is president of Ameri-

Roger Ames is president of American Maple in Newport, Vt. He is also chief software writer, head accountant and sales manager, he said. American Maple uses an IBM System/32 for tracking its maple syrup inventory and for administrative purposes, he said.

The company distributes empty drums to syrup producers, who boil their sap and fill the drums with syrup, Ames said. He pays cash to the producers for the filled drums and tracks the ins and outs of the inventory with software he designed, he said.

#### Implementing similar program

Maple Grove in St. Johnsbury, Vt., is in the process of implementing a similar program, said Jeff Donley, the company's programmer. "We're probably behind most companies in computer implementation, but in the next two years we'll catch up," he said

Maple Grove has been a maple syrup producer for 70 years and bought its first computer — a Prime Computer Inc. Prime 2250 running under the Primos operating system — two years ago, he said. The company uses financial systems from Avent & Associates of White River Junction, Vt., and an order entry and mail order system from Datamann, Inc., also of White River Junction.

Donley is looking toward a near future that includes a materials requirement planning package, and further down the road he plans to include a sales analysis program to help the company expand and analyze sales of its maple products.

# NBS report now available

GAITHERSBURG, Md. — A publication is now available from the U.S. Department of Commerce's National Bureau of Standards (NBS) that describes how to measure the vulnerability of electronic equipment to interference from electromagnetic radiation in the environment.

Working with the U.S. Army's Communications Electronics Engi-

Working with the U.S. Army's Communications Electronics Engineering Installation Agency, NBS has developed a procedure for computing approximate building attenuation values over the frequency range 10 kHz to 10 GHz.

The 310-page report, titled "Building Penetration Project" (NBSIR 84-3009), offers computations of electromagnetic properties of various building materials, the theoretical basis for calculating building shielding effectiveness and descriptions of computer programs used to calculate shielding effectiveness.

The report can be ordered by specifying number 85-126001. It costs \$25. More information is available from the National Technical Information Service, Springfield, Va. 22161.



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# Levi Strauss outfitting U.S., foreign offices with micros

SAN FRANCISCO - Two years ago, it would have been hard to find any personal computers at Levi Strauss & Co.'s corporate headquarters in downtown San Francisco. Today, the clothing company best known for Levi's blue jeans has installed 300 personal computers in its home office and an additional 100 micros in field locations across the

But the company's plans do not stop there, said James Wilson, Levi Strauss' manager of microcomputer support. Sometime this year, Levi Strauss said it hopes to distribute portable computers to its traveling sales representatives. In addition, the company plans to establish a system that will support the transfer of data from textile factories in the Far East to the firm's corporate offices, Wilson said.

Levi Strauss, which relies on a variety of IBM mainframes for its data processing needs, has also designated IBM as the standard bearer for its personal computer users, Wilson said. The majority of Levi Strauss us-ers have IBM Personal Computer XTs; the most common software package in use is Lotus Development Corp.'s 1-2-3, Wilson said.

#### Sales reps use micros

The company has also distributed

IBM Personal Computer XTs to approximately one-third of its sales representatives who use custom soft-ware developed by Levi Strauss to manage retail inventory records. Wilson estimated that approximately 125 members of its sales team are using the software to keep track of what products are moving and which sizes are most in demand.

About five months ago, Wilson said, Levi Strauss rolled out a second custom application for its sales force an on-line order entry system. The system is now being used by 25 members of the sales team. It allows them to create order entries off-line, dial into GTE Telenet Communications Corp.'s Telenet and send the orders

Robert Goodman —
Professional Computer Software, Inc.
Los Angeles, California

to the firm's IBM 3081. The informa-tion is then routed to IBM 4341s in distribution centers across the U.S., where orders are filled. The system has replaced what had been a completely manual operation. "They used to have to write out orders by hand and mail them in," Wilson said.

The system has received a positive response from sales representatives because it gives immediate confirmation that orders have been received and booked, he explained. Wilson said the firm intends to extend the system to other members of the sales force. "It's just a matter of training at this point," he said.

According to Wilson, the primary benefits can be measured in "hard dollars," because a greater number of orders have been received and processed in a shorter period of time. Additionally, the system gives Levi Strauss the chance to "predict [better] where the market is going" be-cause the data can be used in histori-cal analysis and in forecasting trends, Wilson said. Levi Strauss is also setting up a

system to communicate with four textile manufacturing plants in the Far East, Wilson said. By the end of February, contractors will be using Personal Computer XTs to record the status of work in progress — when they receive, cut and sew the fabric and ship the garments — and will use a dial-up line and satellite communications to reach an IBM Personal Computer AT located in Levi Strauss'.

headquarters. But there is a large group of Levi Strauss employees who are still waiting to realize the benefits of computers — they are the traveling sales representatives who typically work on the road for up to 10 days at a time. These representatives need an IBM-compatible, briefcase-size porta-ble system, Wilson said. But Levi Strauss has not yet found the computer that meets its needs, he said.

# Building design topic of Ibis' spring meeting

FORT LAUDERDALE, Fla.— The Intelligent Buildings/Information Systems (Ibis) spring conference will be held at the Pier 66 hotel here on March 18-19.

The conference, sponsored by Barry University of Miami Shores, Fla., and Cross Information Co. (CIC) of Boulder, Colo., will cover topics related to incorporating new technol-

ogies into buildings design.

The conference's theme is "Intelligent Building Blocks," and there will be sessions on planning, design, systems and networks in intelligent buildings, as well as management and sales sessions.

Participation in the Ibis conference costs \$795 and includes all meals and a copy of "The Orbit Study Summary Report." More information is available from CIC, Suite C, 934 Pearl, Boulder, Colo. 80302.

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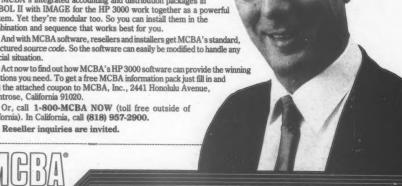
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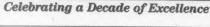
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#### **AUSTRALIA**

MELBOURNE — Control Data Australia Pty. Ltd. will discontinue its Cybertel videotex bureau service as of March 19. Reportedly, the firm will withdraw from the market due to the rapidly changing business environment for videotex services.

#### BRAZIL

BRASILIA — As of March 15, control over Brazil's Special Department

of Informatics will change hands. The department, which controls the information processing industry in the South American nation, will no longer be under the direction of the military's National Security Council. It will instead be administered by the yet-to-be-formed Ministry of Science and Technology.

#### FINLAND

HELSINKI — IBM has purchased \$30 million worth of Finnish-made color display monitors from Salora AB, intended for use in IBM's own product line. The color display monitors were designed for advanced graphics applications, according to a spokesman for the Finnish company. Salora is a division of the privately held Nokia conglomerate, which

posted 1984 revenue of \$250 million.

#### FRANCE

PARIS — Groupe Bull showed a 16.8% growth for 1984, with consolidated revenue of \$1.2 billion. Capital contributions from the French government, the main shareholder in the company, amounted to \$90 million. The infusion of cash was used to revamp the company's computer hardware lineup and operating systems. For 1985, the company has projected a continued growth rate of 17%.

#### JAPAN

TOKYO — Claiming to have developed "the fastest mainframe in the world," NEC introduced its answer to IBM's 3090 Sierra system: the Acos 1500, a high-end, air-cooled line of mainframe processors. The series consists of four models — the uniprocessor Acos 1510, the dual-processor 1520, the triprocessor 1530 and quad-processor 1540. The systems offer between 128M and 256M bytes of rain property.

bytes of main memory. The Acos 1510 is said to offer internal throughput of roughly 37.5 million instruction/sec (Mips), and the 1540 reportedly performs at roughly 135 Mips — more than double the performance of IBM's recently announced 3090 Model 400 processor. NEC has also enhanced releases of its Acos operating system, including the Acos-4/MVP XE, designed for the newly announced mainframe processors.

Deliveries of the Acos 1500 reportedly will begin in June. The machines, which are not expected to be made available in the U.S., will lease for between \$164,000/mo and \$588,000/mo.

#### **NETHERLANDS**

UTRECHT — The Dutch government has contributed \$2.5 million to a Dutch software house, the Bureau for System Development (BSO), to help the company continue R&D efforts on a computerized translation system. By the end of the decade, the company expects to have ready a French-English/English-French translation system, with other languages to follow.

# **SWITZERLAND**

GENEVA — Copyrights and international protective agreements for software programs were two main topics of discussion at the recent World Intellectual Property Organization and United Nations Educational, Scientific and Cultural Organization meeting here.

Legal experts from nine countries conferred on the issue, discussing existing national policies in the U.S., India, Australia and in Scandinavian and other countries, as well as pending legislation in West Germany and France.

# WEST GERMANY

HANNOVER — The upcoming Hannover Fair is expected to show-case five newly developed communications systems, sources indicated. Preshow announcements include Integrated Services Digital Networks systems and digital private branch exchange systems from companies including Siemens AG, Nixdorf Computer Co. AG, Philips Information Systems, Inc., Standard Elecktrik Lorenz and the Frankfurt, West Germany-based Telenorna.

FRANKFURT — Battelle-Institute E.V. is conducting research on inhouse networks in office automation. The study will focus on U.S. and German companies using local-area networks and will include technical aspects as well as the ergonomic impact of local-area networks on the organization. Companies interested in participating in the international research are invited to contact Battelle's Udo Frenzel at Postbox 900 160, D-600 Frankfurt 90, West Germany.



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# In-house DP setup saves city money, increases efficiency

FRIDLEY, Minn. — When this northern suburb of Minneapolis de-When this cided to bring its municipal data processing in-house, it turned to a system from a local vendor that city officials say has improved the city's utility billing and other functions.

Fridley, with a population of 30,000, had previously belonged to a regional municipal computer consortium that provided financial computing services such as payroll and utili-ty billing for its 24 member cities. Those services alone were fine, city officials said, but additional user-designed programs were not available.

In 1984, after looking at the offerings of four or five vendors, Fridley purchased and brought on-line an alternative to the consortium's services — a turnkey system from Tele-Terminals, Inc. in nearby Brooklyn Park, Minn. Included was the Non-Profit Management System (NMS), software developed by Tele-Terminals that processes financial data and also serves the data processing needs of Fridley's fire department, public works department, city assessor and other departments.

In addition, city officials said the new system's hardware and software cost less in a five-year term than the consortium's services, despite the \$20,000 penalty that the city will have to pay the consortium for its early exit.

#### Flexibility is best feature

According to Fridley's director of central services, Sid Inman, the best feature of NMS is its flexibility. NMS consists of 12 independent software components, including payroll, utili-ty billing and liquor store management subsystems. All 12 modules will be used by the city and will run on a Texas Instruments, Inc. 990 computer system that was also part of the Tele-Terminals package. The system is linked with 28 terminals and 15

City employees, who had first feared the in-house system was a threat to their jobs, have not been replaced by the system and have found, according to Inman, that "there's nothing fancy about it. In fact, their

jobs have been simplified."

In addition, the city has begun to use the system for cross-training employees who are working with the same data base so that they can learn each other's tasks — ending the dis-ruption caused by vacations and leaves.

#### Software simplifies work

Finance Officer Rick Pribyl said he has found that the software simplified his work. In the job costing area, for instance, the consortium could only give calendar year data, despite the fact that most projects take several years to complete.

"We spent numerous hours manually searching in vaults for stored records recounting other years," Pribyl said. NMS, he said, can accumulate years of data and allows compilation of cost centers for nearly any

activity.
One NMS component, the Fire Information and Reporting System, has assisted the city's fire department. When firefighters receive an emergency call, they enter information into a terminal, and a printout showing exactly where a fire is occurring

as well as what type of structure involved available immediately. Printout information also includes how many people live at the residence, wheth-er a resident is disabled or handi-capped and and whether hazardous materials are present. Fire Chief Bob

Aldrich said the system is easy to op-erate. "All the [computer] experience I've had is a five-week course in Ba-



On-line in Fridley, Minn.

sic at a technical school, and that course was very, very basic," he explained.

Data stored and retrieved by the system helps in the administrative tasks of the de-partment as well as in firefighting. Aldrich recently used the system to compile a report for the city coun-

cil that include the types of fires, losses involved and value saved by firefighting. The report, which in the past took him three weeks to com-

plete, was ready in two days.

Another NMS component, liquor management, allows the transfer of data from the cash registers at municipal liquor stores directly to the city's data base. The software's utility billing program lets the city set its own billing cycles, including the number of grace days it wishes.

The in-house system, Inman said, has increased savings and services over that of the consortium. It may also have helped improve employee morale and the city's image in the eyes of taxpayers, Inman said. "NMS has improved our image," said Inman. "If cities ever needed good PR, they need it now."





Taylor and the 16-bit Grid Systems Corp. 1109 portable personal computer

## Portable micro broadens firm's office boundaries

SAN MATEO, Calif. lor's heavy travel schedule as general manager for an equipment leasing company forced him to spend more working during non-office hours.

When he is out of the office, Tay lor uses a Grid Systems Corp. 1109 portable personal computer to write memos, prepare charts and graphs, do financial projections and analyses and work out budgets for USL Data Systems, a division of U.S. Leasing International, Inc.
The Grid computer is a 16-bit Intel

microprocessor-based

system with an 80-bit arithmetic coprocessor and up to 1.4M bytes of built-in memory and storage capacity. It has a flat-panel electroluminescent screen that displays 25 lines by 80 characters. Speed of communications, IBM compatibility and full screen capacity were of particular importance in Taylor's selection of a portable micro.

Using standard telephone lines and the Grid's built-in 1.2K bit/sec modem, Taylor and other USL Data Systems executives can exchange information with one another from remote locations. While attending a board meeting in Boston, Taylor hooked the Grid up to the telephone in his hotel suite and accessed information from USL Data System's headquarters in San Mateo. He then prepared drafts of a board presentation, transmitted them to headquar-ters for comments and integrated those comments into a 10-page report illustrated with financial projections and graphs.



USL Data Systems is networking its Grid server, which supports 48 local and 10 remote computers. Staff members at the San Mateo headquar-ters and 10 national sales offices will be able to share information and peripheral devices while in the office and on the road, he said.

The company also served as a test site for Gridflex, a time management tool. Gridflex includes a calendar and time-of-day display, an appointment schedule with a week-at-a-glance feature and an automatic appointment

With Gridflex, Taylor said, executives enter appointment times that are then displayed graphically both on the monthly and the week-at-aglance calendars.

An automatic alarm serves as a reminder of appointments and meetings throughout the day. "You can do all those things without going to computer school for five years," Taylor

A computerized business card file that automatically dials telephone numbers is also part of the Gridflex package. Taylor refers to the business card file as his "mini data base." When he wants a particular number, he electronically locates the appro-priate business card and presses the telephone function key. The computer automatically dials the telephone number for him. "Grid has taken the grunt and drudgery out of my work," Taylor said.

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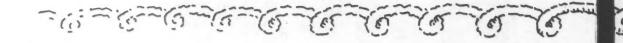
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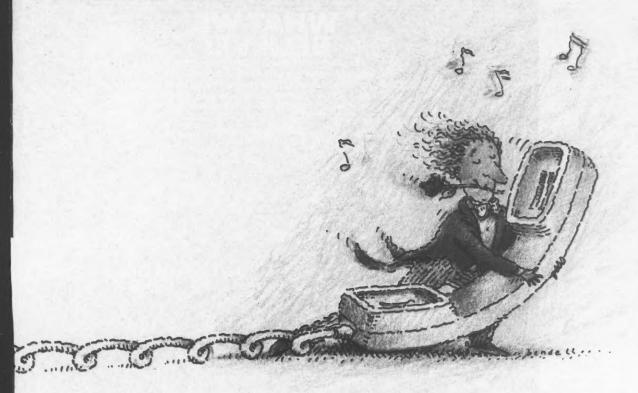
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## MIS team pieces together networked data facility

TULSA, Okla. — When Southland Corp. decided to purchase Cities Service Gas and Oil Corp.'s oil refining, marketing and transportation assets in 1983, the executive in charge of Southland's MIS gave the newly created company 90 days to build an operational data center and communications facility.

Renamed the Citgo Petroleum Corp., the former Cities Service division actually accomplished the task with three days to spare. "We had our data center, our private branch exchange and all our

Citgo's data communications system for net management

communications geared up and running production work 87 days after the sale to Southland," said Tom Shull, Citgo's manager of network services. Shull, along with data communications manager Alan Ezarik, was responsible for the communications aspects of the project.

The directive from Southland's vice-president of MIS to move quickly on the center and facility left no time for a formal request for proposals. Shull and Ezarik compiled a list of components for the system and began contacting vendors.

Despite this hurried approach, Shull and Ezarik came up with a data communications system that moved Citgo from technical control—simply finding an error and fixing it—to network management. The network had the potential for capacity planning because it incorporated a digital matrix switch with a management reporting system that tracked recurring problems, according to Shull.

Prohibited from hiring staff and ordering equipment until Citgo actually became part of Southland on Sept. 1, 1983, Shull and Ezarik busied themselves "looking at where we wanted to go." Early in the summer they studied the data processing operations the network would serve and put together a list of prerequisites for the monitoring, testing and switching devices they needed

they needed.

The data center today includes four host computers:

an IBM 3033 and a 4381, an Amdahl Corp. V7 and a Digital Equipment Corp. PDP-11/45. Of these, the 4381 and PDP-11/45 are essentially stand-alone processors; the IBM CPU runs marketing and manufacturing models, permits time-sharing and links to an IBM 3705 front-end processor as well as three

leased lines and 27 terminals.

The DEC machine is used to receive information from 26 light oil terminals scattered throughout the Eastern part of the country.

#### Data center's main units

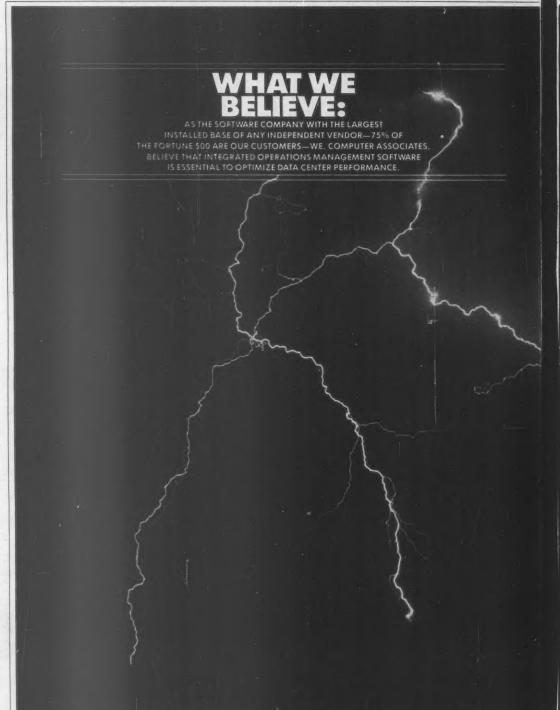
The IBM 3033 and the Amdahl V7 constitute the main components in the data center. Both use IBM's MVS operating system, and the two

computers are tied together with IBM's JES software. The 3033 runs an in-house time-sharing system called TSO for 368 users, as well as the main JES software, which includes IBM's Remote Job Processing (RJP) software. With RJP, a variety of remote devices can access the 3033.

Meanwhile, the Amdahl

V7 handles several on-line applications. IBM CICS is used by approximately 112 users in credit card/cashier and human resources operations. Another 111 users employ IBM's IMS cost center accounting and inventory management functions.

Two Amdahl 4705 frontend processors sit between these two CPUs and the data



## with three days to spare for newly formed oil firm

network. They run software that takes much of the load of managing a data network off the main data center.

Ninety-five percent of the users who access the main data center — chiefly programmers and others doing development work — employ data communications, which at Citgo means working in an IBM Systems Network Architecture environment. The remaining 5% have access in local mode to a processor channel.

#### **Vtam support**

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Citgo uses IBM Vtam, and all of the on-line applications that run in the main data center — TSO, CICS and IMS - support Vtam. The company has approximately 300

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IBM 3270-type terminals on 34 leased lines that can acapplications these through Vtam at 9.6K bit/ sec. Citgo has another 65 asynchronous terminals that operate at the lower speeds of 300 and 1.2K bit/sec and are limited to the data center's two time-sharing options - TSO and CMS.

Located between the user

terminals and modems and the network's front-end processors is the 70- by 140-line digital switch. This device, a Dynatech Packet Technology, Inc. CTM-1000 matrix with Dynanet 57 controller and Dynanet 200 alarm system, provides diagnostic fallcapabilities that Shull and Ezarik consider invaluable for the data center.

The ability to monitor lines when problems occur, to sound the alarm when lines fail, to switch either production front-end processor from spare to on-line with one command and to track problems through a management reporting system were all on Citgo's list of musts when it went looking for a system in 1983, Shull said.

Time constraints, along with the desire for a switch with a manual override in case the computerized confailed, narrowed the field to one vendor.

Because it included integral patching from the start, Dynatech's matrix became



A management reporting sys-

tem tracks problems

Shull's switch of choice. Shull said he believes that the Dynatech switch eventually will make it easier for the company to absorb the growth it has planned. Citgo has already ordered another cabinet and 32 more ports. Beyond that, Citgo manage-ment is considering automation of all the firm's field locations.

In the months ahead, Ezarik and Shull said they would like to see Dynatech add to the management reporting functions the switch already offers. They said they also look forward to a larger storage capacity for the operational data the matrix generates and the ability to transmit this information to a host CPU for safekeeping. They both said they would benefit from a history of the network's perfor-mance on tape or disk.

tional software, Citgo said it looks forward to using the matrix switch as an integral part of its capacity planning.



When coupled with addi-



## Report writer assists Cobol shop with 20% of programming

DALLAS — A Cobol shop here has discovered that a report writer could be used for as much as 20% of its programming tasks.

The Southland Life Insurance Co., headquartered here, provides life, accident and health insurance nationwide. According to Tom Johnson, second vice-president and manager of information services, all of the data processing for the corporate office and its sales agencies is performed by approximately 30 programmers in the Dallas data center.

On an IBM 3033 attached proces sor mainframe running under IBM's MVS operating system with TSO and CICS, the data center maintains all policies currently issued, informs agents of policies due for renewal and performs general financial reporting, Johnson said.

In January 1984, after a year as a beta-test site for DYL-280 II, a product of Granada Hills, Calif.-based Dylakor, Inc., Johnson made the decision to use the package — a report writing language with utility and programmer aid features and data analysis functions — in a production environment. Johnson, who is in charge of the programming and system design departments, said he had been using earlier versions of Dylakor's report writers since 1977, but their use was relegated to quick reports and utility needs.

DYL-280 II has now been in pro-

duction since June 1984, and approximately 10 new programs are generated every week, Johnson said.

For production jobs, company poli-cy had dictated that Cobol, Fortran or assembly language be used, Johnson said, and the shop used approxi-mately 95% Cobol. The theory was that these standardized languages offered consistent documentation for update and maintenance, and they fit reliably into proven security procedures, he said.

#### DYL-280 Il rated better than Cobel

Johnson concluded after trying DYL-280 II that the package was easier to maintain than Cobol and more cost-effective for straightforward reporting and data extraction. "We don't use it for complicated functions because it doesn't have the organizational capabilities of Cobol. For example, you can't call subprograms the way you can in Cobol," he said.

The package is much faster than Cobol for simple reports partly because it does formatting, such as titles and centering, Johnson said. He added the package to the list of languages and tools authorized for use in production, and it is now used for about 20% of the company's programming needs, he said.

The data center has clearly de-fined procedures that ensure data security and efficiency of the center's operations, Johnson said. All mod-ules must be stored and maintained permanently in such a way that a

history of updates is on record.

The Freeze Option feature in DYL-280 II suits this requirement because it prevents changes in the source code and creates a permanent module that is placed in the protected operating system load library, he said. It also saves execution time because it can be run "load-and-go" without translating the source code, he said. New DYL-280 modules go through

series of tests, Johnson said. When they pass these, they are authorized for production, put into the daily cy-cle and watched closely for a period of time, the length of which depends on how critical the package is.

When it is determined that a module works well in actual production, it is absorbed into the system and copied onto the production libraries, he said. This process from beginning to end takes approximately two to four weeks for an average module.

The package is also used as a tool for quick reports and special programs, Johnson said. The systems design department works with end users to define the kinds of reports each new insurance product requires to manage issuance of the policy, to value it, to issue bills and to collect premiums and agency commissions, Johnson said. Much of this group's documentation is generated using DYL-280 II, he added.

The systems design group also does a good deal of testing and cross-checking to ensure companywide accuracy, Johnson said. DYL-280 II has sampling and analysis capabilities that are used in numerous ways to confirm that operations are function-

ing, he added.

In one example of a search for errors, a DYL-280 II program is used to compute the correct interest paid, he said. Reports are then run to compare the amounts actually paid with the amounts that should have been paid, he added, and records with discrepancies are sorted out for further analysis.

So far, 80% of the programmers have picked up the use of DYL-280 II themselves or with the help of trainers, Johnson said. Training takes place in-house using manuals and documentation developed by Dyla-

kor.
"There is a natural resistance on the part of our Cobol programmers to learn another language, but once they have used it a few times, they like it because of its simpler operations," Johnson said.

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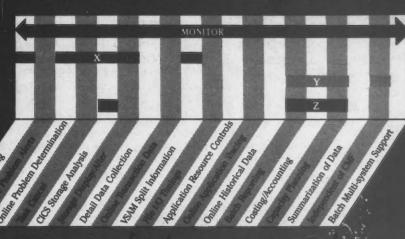
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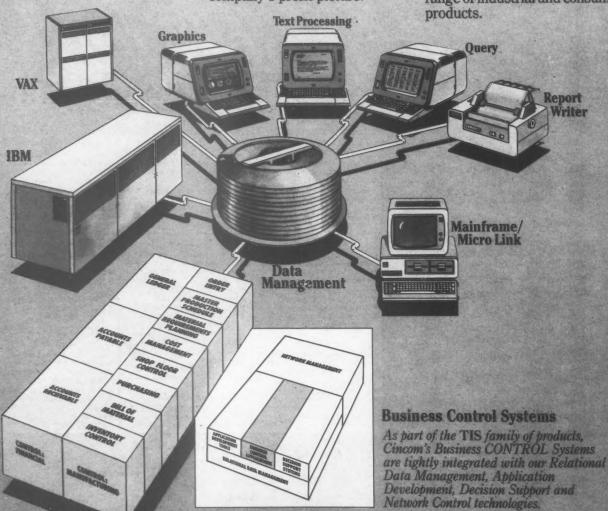
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## Spreadsheet maximizes public utility's resources

# Mainframe package fulfills sundry duties

EPHRATA, Wash. — In an effort to meet the needs of its expanding customer base, a major public utility here is using a mainframe spreadsheet package.

Grant County Public Utility District owns and operates two hydro-electric generating plants on the Columbia River. The utility serves more than 30,000 customers, including an increasing number of energy-hungry industries. According to Jerry Burke, the utility's business systems coordinator, its performance in generating

power is a major factor in Grant

County's future growth.

Burke said the utility's data processing department operates an IBM 4341 mainframe under DOS/VSE with CICS. The IBM mainframe is the core of an on-line network consisting of 83 terminals and 14 printers. The department also operates an IBM 4331 mainframe dedicated to computer-aided drafting applications, allowing engineers to keep up with design demands for substations and distribution systems.

To make its workers more productive, the utility wanted to give end users the ability to develop their own applications. "We wanted to give end users the tools and resources they

needed to solve their own business or technical problems," Burke said.

#### User requests

Thus, the data processing center began a search for a generalized business tool that would fit into the utility's IBM CICS environment. A common user request was for spreadsheet capabilities to help in forecasting, budgeting, "what-if" planning and solving problems requiring iterative calculations.

After comparing three electronics spreadsheet products designed for mainframes, the Grant County Public Utility District selected Maxicalc from Hasbrouck Heights, N.J.-based Oxford Software Corp. Maxicalc is an

interactive, nonprocedural management planning system that provides IBM 3270 terminals with on-line electronics spreadsheet capabilities. It allows CICS terminals to emulate a microcomputer with spreadsheet capabilities.

According to Burke, end users wasted no time, in finding creative ways to apply Maxicalc to solve time-consuming problems. One such problem involved the analysis of the number of fish traveling up and down the Columbia River past the utility's dams.

"Because we have dams on the river," Burke explained, "we address a number of environmental concerns, including ensuring that fish successfully migrate past the dams. To support this effort, every season the utility's environmental people perform a number of studies involving massive amounts of fish passage data."

amounts of fish passage data."
With Maxicale, Burke said, environmental data analysts designed a mathematical model that demonstrates how the movement of different species of fish can be optimized by increasing or decreasing the volume of water spilled from the dam to aid fish passage. The model allowed

#### 77

Before the utility implemented the spreasheet, calculations often required weeks to perform.

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Excelerator does for the systems analyst what CAD/CAM has done for the design engineer. It automates much of the task of producing complete and verifiable system specifications. It is a tool designed by professionals for professionals. Call or write for more

the environmental analysts to predict the success of fish passage based on volumes of water.

Also, according to Burke, there are real economic incentives for the utility to optimize the amount of water diverted through spillway gates as opposed to spinning turbines for power generation.

"Stored water is energy," Burke said. "Any water that is spilled from a dam without going through the turbines is essentially lost revenue. Using Maxicalc, we can perform 'whatif' analyses to determine impacts in terms of lost, new or retained revere."

Burke said that before the utility implemented Maxicalc, those kinds of analyses were performed with programmable, hand-held calculators. The iterative calculations often required weeks to perform, and the reliability of the results could not easily be tested or demonstrated. Now, he said, the spreadsheet permits analysts to generate calculations with a high level of confidence in a metre of house.

in a matter of hours.

Approximately 100 people in the utility now use Maxicalc on a routine basis — and that number is growing. Responding to a detailed questionnaire prepared by Burke, users in the controller's and the treasurer's offices and in the engineering, environmental and fisheries areas were able to identify significant time savings gained through use of the mainframe spreadsheet. Some users even demonstrated that the increased productivity helped the utility avoid the cost of hiring consultants.

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Givens (right) and Phal Inspect Komstar 200 processor.

# GTE Sprint cuts turnaround time with on-site microimage system

BURLINGAME, Calif. — When customers call a long-distance telephone company here to question charges on their invoices, they expect quick answers.

GTE Sprint Communications Corp., which mails millions of invoices each month, has found that paper records are impractical and on-line computer storage of massive amounts of invoice data becomes increasingly less cost-effective as the information gets older. As a result, GTE Sprint uses micrographics — storing document images on

microfilm — as a solution to the problems of archival storage and retrieval.

Michael A. Givens, the DP department's manager of production control, said that until mid-1981, GTE Sprint used a local service bureau to prepare microfiche records of invoices. The billing computers created magnetic tapes that generated the revenue-generating invoices and were then used to produce microfiche at the service bureau. Each of the service bureau's microfiche held 270 invoice pages.

invoice pages.

At that time, the department's programmers had not yet brought up the billing system's current-month, online retrieval capability, so all customer billing inquiries were answered by referring to microfiche.

#### Unhappy with time delay

However, Givens and William Phal, GTE Sprint's director of data processing, were not comfortable with the time delay involved in having the microfiche produced off-site or with the computer tapes, which contained sensitive information, not-always under their full control.

In a cost study Givens prepared in early 1981, he determined that the monthly charges of the service bureau were slightly more than it would cost to make monthly payments on the purchase of a computer output microfilm device. As Givens recalled, "It wasn't the dollar differential that sold us; it was the improved turnaround time that was made possible by bringing the computer output microfilm function on-site."

GTE Sprint decided to install Eastman Kodak Co.'s Komstar 200 microimage processor. Givens said the Kodak product was the only one given serious consideration because, at the time, it was the only such system the company was aware of from a major vendor with an adequate installed base.

According to Givens, the system initially fulfilled all of GTE Sprint's microfiche needs while working at only 21% of maximum capacity. He estimated that for an arbitrarily selected increment of growth, GTE Sprint's on-site equipment would cost 62% less than at the service bureau.

Over time, that excess capacity became useful. By September 1982, the microimage processor was operating at 59% of capacity. A year after that, GTE Sprint acquired a second unit, and the pair was operating at 64% of total capacity. Hidden See INVOICE page 51

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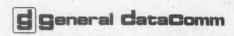
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Then we went inside and did a component count. The final score: Hayes 252, us 155. This can be viewed two ways: Either Hayes has a 60% better chance of developing part failure or our modem has a 60% better chance of delivering higher reliability.

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### Ada conference scheduled

WASHINGTON, D.C. — The Federation of Government Information Processing Councils is sponsoring a three-day conference, titled "Using Ada: Getting Results," April 1-3 at the Shoreham Hotel here.

Public and private sector Ada experts will present case studies and examples of how a company can use

Featured speakers include Robert daCosta, chairman of the board of Rush Franklin Publishing Co. and U.S. Army Lt. Gen. Emmett Paige Jr., commanding general, information systems command, according to the sponsor:

The conference is divided into three tracks: Ada in Department of

Defense Applications, Ada Applications and Education and Ada Technology.

#### Three one-day workshops

Three one-day workshops, Ada Software Engineering, Introduction to Programming with Ada and A Manager's Introduction to Ada, are scheduled for April 3.

The conference registration fee is \$775 for private industry employees and \$565 for employees of the gov-

More information may be obtained from Conference Manager, U.S. Pro-fessional Development Institute, 1620 Elton Road, Silver Spring, Md.

#### Common to celebrate 25th anniversary at spring meet

LOUISVILLE, Ky. — Common, an IBM users group that claims to be the - Common, an world's largest, will celebrate its 25th anniversary at its Spring '85 conference, planned for April 27 to May 1 at the Galt House here.

Included among the more than 275 scheduled presentations are sessions on multisite/CPU quality assurance, IBM System/34 and 36 operator aids and structured analysis methods. Also to be discussed will be IBM Personal Computer connectivity and Personal Computer clusters vs. Personal Computer networks.

Common's membership is said to comprise users of IBM's System/34

and 36, Series/1, 4300, 1800, Displaywriter and the Personal Comput-

A number of special management sessions at the conference will reportedly offer continuing education unit credits from Northwestern Uni-

Conference registration for mem bers costs \$130 in advance and \$165 at the door.

For nonmembers, registration costs \$200 in advance and \$225 at the door.

More information is available from Common, which is located at 435 N. Michigan Ave., Chicago, Ill. 60611.

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INVOICE from page 50

in those capacity figures, Givens said, was the ability of the on-site machines to operate 24 hours a day, seven days a week, compared with the service bureau's five-day week.

Another advantage has been that the Komstar processor can be customized under software control to fit particular applications. By selecting the optimum character font and in-voice image size, GTE Sprint was able to place 1,067 invoice pages on each 4- by 6-in. microfiche, compared with the 270 pages it was getting from the service bureau. In the August 1983 benchmark month, invoices filled some 5,300 microfiche. Output on the units is 10,000-plus invoice pages per

Givens said he was somewhat skeptical of the manufacturer's claim that the device would not require additional personnel, but that has proven to be the case. Because the Kodak unit uses no chemicals - instead, it utilizes a laser to expose a special dry-process film — it could be installed in the computer room adjacent to the main console.

The system operator has found it to be no burden to load film about once a day and remove exposed microfiche from the output hopper during breaks from his other duties, Givens said.

#### 'Needs very little attention'

"Compared with a high-speed paper printer, it needs very little attention," he noted. A separate operator is required for GTE Sprint's micro-

fiche duplicator, which is located in another room, but the company was already using that machine and operator while it was still getting its microfiche from the service bureau.

Currently, about 70% of the computer output microfilmer's production is used for invoices. The bulk of the remaining 30% is taken up by accounts receivable reports.

GTE Sprint is anticipating continuing growth and is planning additional data processing centers. A new processing center opened in Sacramento, Calif., with a pair of Komstar 200 processors sharing the invoicing load with the Burlingame DP center. Other centers are scheduled to open in Dallas and in the Washington, D.C. area.

#### ourage move to microfiche

Phal said that if a switch to cyclic billing and the new data processing centers help to even the load on GTE Sprint's micrographics equipment, he will encourage people within and outside his department to move more batch output jobs to microfiche

The first candidate, he said, is the production job control listing, which he would like to see produced early in the morning and distributed to all interested parties by 8 a.m.

"Such time-sensitive applications are ideal for microfiche," he observed. "The advantage of micrographics is that instead of worrying about who has the [job control lan-guage], or whether it's been mislaid, you can package the entire large listing in a small volume and provide everybody with his or her own copy."

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To have a paper considered for presentation at the conference, authors should submit a 35-word abstract and minimum 500-word paper outline of a manuscript suitable for a 20-minute presentation. The outline must be submitted in 10 copies to one of the following locations: in Europe A.B.M. Elliot, Research Laboratory, British Telecom, Martiesham Heath, Ipswich, England IP5 7RE; in Tsuneta Sudo, Atsugi Electronics Communications Laboratory, Telegraph & Telephone Nippon Corp., 1839 Ono, Atsugi, Kanagawa 243-01, Japan; in India — Nripendra N. Biswas, Department of Electronic Communications Engineer, Indian Institute of Science, Bangalore 560 012; - Rudy in the U.S. and elsewhere — Rudy Garcia, International Test Conference 1985, P.O. Box 264, Mount Freedom. N.J. 07970.

Deadlines for submissions are March 1 in Europe, Asia and India; March 15 for the U.S. and elsewhere. Authors of accepted papers will be notified in June and will, at that time, receive a kit of preparation in-structions. Final typed manuscripts must be at least 1,500 words and must be received in the U.S. no later

than Aug. 1. Late submission of papers will be

cause for rejection.

For additional information, contact International Test Conference 1985, P.O. Box 264, Mount Freedom, N.J. 07970.

#### 11TH INTERNATIONAL CONFERENCE ON VERY LARGE DATA BASES (VLDB CONFERENCE) Stockholm, Aug. 21-23

The 11th VLDB Conference will emphasize the contribution of data base technology to evolving areas such as artificial intelligence, software engineering, computer-aided design and manufacturing, graphics, office information systems and the challenges interaction with those ar-eas presents to data base manage-

Papers and proposals for panel sessions are also solicited. Each proposal subject should address specific issues and include potential partici-pants and a panel chairman. Original papers in English of up to 5,000 words should be submitted before Feb. 18. Each paper will be received by at least three program committee members. Send five copies to either of the Program Committee Chairmen: Alain Pirotte, Phillips Research Laboratory, 2 Avenue Van Becelaere, 1170 Brussels, Belgium or Yannis Vassiliou, Graduate School of Business Administration, New York University, 100 Trinity Place, New York, N.Y. 10006

#### URISA '85 (COMMUNICATIONS OF THE URBAN & REGIONAL INFORMATION SYSTEMS ASSOCIATION) Ottawa, July 28-Aug. 1

This is the last call for papers for this conference, which seeks encouraging papers that highlight applications benefiting an identified organization. The Conference Committee is also encouraging poster sessions depicting an application.

For information regarding submission of abstracts or poster sion of abstracts or poster sessions, contact D. David Moyer, URISA '85 Program Cochairman, U.S. Department of Agriculture, 320 Henry Taylor Hall, 427 Lorch St., Madison, Wis. 53706.

## A DECADE OF PROFESSIONAL

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Authors are invited to submit papers and panel session proposals describing management/technological advances that have a profound effect on the future of information technology. Papers on research of, use of or experience with the following are desired: micros, micro-mainframe connection, capacity management, fault-tolerant systems, fourth-generation languages, MIS planning, local-area nets, privacy and security, software and hardware engineering, contracting, human factors in engineering and computers in education. Four copies of not more than 15 doublespaced pages must be submitted no later than March 15 to Allen E. Ware, Conference Chairman, Black Data Processing Associates, P.O. Box 2254, Philadelphia, Pa. 19103.

The first page must include the ti-tle and a 250-word maximum abstract; all authors names, affili-ations, mailing addresses and telephone numbers. The following signed statement should be included: "All appropriate organizational ap-proval for the publication of this paper has been obtained, and this is a commitment that one of the authors will present the paper at the confer-ence if it is accepted."

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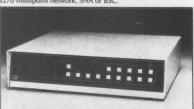
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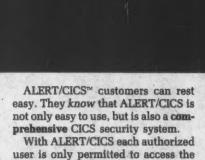
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## Firm cuts inventory with resource planning package

BURLINGTON, Iowa - A manufacturer of television antennae, amplifiers and receivers has reduced its inventory, cut purchasing and freight costs and realized inventory turnaround improvements since installing a manufacturing resource planning package.

According to Dennis K. Krieger, director of materials at Winegard Co., a supplier of television reception products, his firm gained the following benefits in one year's time after the implementation of the package:

A 29% reduction in inventory.

A cut in the cost of purchased materials.

■ A 14% savings in freight costs.
■ A 25% improvement in inventory turn rates.

Winegard - founded in 1954 builds a wide variety of television re-ception products, including television antennae for most major recreational vehicle manufacturers, outdoor TV antennae and accessories, CATV amplifiers and satellite antennae and receivers, Krieger said. The company implemented the

MRPS Manufacturing Resource Plan-

network protocol, he explained.

"In the past, we had to rely on history and educated guesses to determine quantities and delivery dates for component parts," Krieger said. We now make intelligent decisions based on solid information.

According to Krieger, the inventory control module of MRPS has effectively eliminated obsolete and excessive inventory. He said he can plan engineering changes so that in-ventories of potentially obsolete parts can be consumed.

By being able to order the right quantities of parts at the right time, the company has improved its annual inventory turn rate from 3.62 to 4.51, Krieger said.

An additional benefit was a reduction in the cost of purchased materials, Krieger indicated. The system gives advance notice of what parts will be needed, he added. This gives the purchasing department the op-

portunity to shop for the best price. Freight costs have also been reduced at Winegard, Krieger said.
"Previously, it seemed as if we were
always in a back-order situation. We have a regular delivery schedule with our own fleet of trucks. If a shipment somehow missed the schedule, we had to send it out with a common carrier," Krieger said. "With improved planning, we can meet our schedules and avoid extra freight costs. That saved us 14% in the first year alone," he added.

MRPS was used in a batch mode until August 1983, and with the in-stallation of MRPS 4.0 at that time, Winegard went on-line, Krieger said.

Data entry work has been cut substantially, he indicated. Prior to the installation of MRPS, there were seven people working with data entry. Today, he explained, there are only two data entry people, one of whom works part time

Winegard has recently installed a purchasing module — the Vendor Analysis and Purchasing System -Krieger said. The company was selected as a beta test site last July, and so far the purchasing module is working well, he said.

The inventory control module has eliminated obsolete and excessive inventory.

ning System from Cincom Systems, Inc. of Cincinnati to coordinate inventory and production information for electronic assembly facilities and fabrication plants here and in Chariton, Iowa; Matamoros, Mexico; an R&D lab in Colorado; and a finished goods distribution warehouse in Los Angeles, Krieger said.

This multiplant environment was a major reason for installing MRPS, he said. "We wanted to be able to develop a single game plan, coordinat-ing all of our locations together in a comprehensive manner," he said.

Production planning and inventory control changes at Winegard forced changes in the data processing department, according to Krieger. Since the MRPS decision was made in the spring of 1979, the hardware environment has had to upgrade, he said. The company changed from a Sperry Corp. 90-40 to an IBM 4361 running under DOS/VSE with CICS/ VS. Vtam/E and Vsam, he added. Currently, the system supports 45 termi-

The company did not expect to have to upgrade its equipment so soon, but Krieger is not unhappy that the firm had to increase power. Since Winegard now has a bigger computer and more storage, it has been able to cut back from a round-the-clock oper-ation schedule to one of 16 hours a day, eliminating one shift, he said.

System software includes Cin-com's Total 8.0 data base management system and Cincom's Mantis fourth-generation applications devel-opment system, Krieger said. Wine-gard's teleprocessing network uses fiber-optic data transmission with IBM's Systems Network Architecture/Synchronous Data Link Control

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My company has finally decided to make a commitment to education for MIS personnel. I've been asked to do some research and make recommendations for the training budget. The budget is to include a full-time MIS training director. Are there any budget guidelines that others have followed in setting up an education program?

up an education program?

Because the scope of the training budget varies so much from organization to organization, I'll speak in terms of education-weeks per year. Keep in mind that your choice of educational delivery systems has a major impact on a training budget. A week of self-paced video instruction is less costly than sending someone across the country to a seminar.

A surprising number — at least one-third — of MIS departments have no policy on education. In these cases, education is ad hoc, provided on an as needed, as available, basis. For those companies with an education policy, the average commitment is around two education-weeks per year per person.

This figure is a bit misleading because many of these policies are not backed with implementation. I consider two weeks per year woefully inadequate.

On the high end, it is not uncommon for some companies to fund eight to 10 weeks of education for their technical people.

Practically speaking, I don't see how any computer professional can hope to keep pace with the technology without devoting six to eight weeks a year to educational pursuits. I would recommend a policy that identifies a certain number of weeks, perhaps four, that would be dedicated to structured, interactive learning situations.

This is to avoid the overused rationalization of on-the-job training. On-the-job training is fine when properly administered and controlled, but most on-the-job training is really on-the-job work. Another couple of weeks should be set aside for individual learning that meets the company's immediate needs for specialized expertise.

I recognize that many readers will pass this recommendation off as economically not feasible. But before you do, consider the potential for increased productivity (perhaps 100% or more) and the opportunities for a more effective use of the technology.

Q I am now a business student finishing my second year toward a degree in finance. Several other business students and I are debating whether or not to take an elective programming course. Will we need programming in our careers?

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Netec International, Inc. P.O. Box 18538 • Dallas, TX 75218 214 324-2648 • Telex 80-4294 Q I am a senior programmer/analyst. I have worked for five different companies since graduating from college eight years ago. Each job change offered a new opportunity and included a salary increase. I have been with my current employer for about two years.

Another company has just offered me what appears to be a good opportunity with a substantial salary increase. Should I consider making another job change? Would another job change at this point in time damage my credibility in the long run?

As a rule of thumb, it is a year before a new programmer/analyst hire, even one with experience, begins to make a net positive contribution. Your current employment record has you leaving just after you start to have an impact on the bottom line. Because of this, your tenure with previous employers will overshadow your technical capabilities in future job searches.

If you take the new position, make certain that it is all that you anticipate. Plan on staying for at least three years so that you can reestablish your credibility as an employee. A prospective employer can only conclude from your current employment history that you may not be part of the head count in a couple of years.

Long, president of Long and Associates, is a consultant, lecturer and author in the field of information services. If you have a question you'd like him to address, send it to Larry Long, Editorial Department, Computerworld, P.O. Box 880, Framingham, Mass. 01701.



## Naval analysts search for answers with statistical tool

ALEXANDRIA, Va. - A new computer system and an updated version of a statistical software package have made life easier for a group of research analysts here.

At the Center for Naval Analyses (CNA), 200 research analysts work every day on a variety of questions that range from the exotic to the mundane, said Lisa Greisen, a statistical applications consultant for the center. While one group may be figuring out possible uses for high-energy laser weapons, another may be studying the problem of how to get more enlisted personnel to reenlist for another three or four years, she

Researchers at the CNA now delve into such topics with the help of three Digital Equipment Corp. 11/780s and SPSS Inc.'s SPSS-X, an information analysis software package for statistical applications, Greisen said.

Ninety-five percent of the CNA's earch contracts are carried out for the Navy, but CNA staff also perform research and policy analyses for groups such as the National Science Foundation and other government agencies, Greisen said. Many of the applications involve data sets that contain enormous numbers of cases, such as the Enlisted Master Record (EMR), which includes demographic and categorical information on thou-sands of people either currently or formerly enlisted in the Navy, she

"I don't think we've ever been able to process the whole EMR," Greisen said. "What we do is work with subsets of the data file."

Greisen said that with the CNA's earlier Burroughs Corp. computer system and an early version of SPSS-X, she could not process more than 30,000 or 40,000 records. The VAX/ SPSS-X combination allows her to process from 600,000 to one million records with no hardware problems, she said.

The center converted to the VAX/ SPSS-X combination in October 1983, Greisen said. The hardware choice was dictated by software availability and ease of use, she added. The cen-

Info conference slated for April

NEW YORK - New Opportunities in Management Information, a conference for senior management and information executives on the policy issues surrounding management information, will be held here April 17-18 at the Waldorf-Astoria Hotel.

The conference is sponsored by the Conference Board, Inc. Speaking will be John G. Sifonis, national director for strategic information sys-

tems planning at Arthur Young & Co. Conference registration is \$475 for Conference Board associates \$575 for nonassociates.

After Feb. 18, the rates rise to

\$535 for associates and \$635 for nonassociates.

For more information, the Conference Board may be reached through P.O. Box 4026, Church St. Station, New York, N.Y. 10249.

ter has a growing library of software packages for various applications, ranging from word processing to dis-

crete system simulation. SPSS-X is in constant use by some 30 to 40 researchers, Greisen said. The computing services staff uses the package's Frequencies and Condescriptive functions to ensure that data is clean by making preliminary runs through large data sets that come in from outside sources, she

In a study of the reenlistment bonus program, SPSS-X was used to check the effects of the Navy's reen-listment policy on different categories of personnel, Greisen said. "We were developing a model that would predict what kind of people would re-enlist with a bonus or what kind of bonus program would attract what kind of people," she said.

#### 'Chronic shortage' of programmers

CNA faces "a chronic shortage" of people who can program, Greisen said, so a package that quickly leads researchers into handling their own applications is popular. Greisen conducts courses and seminars for an hour to an hour and a half over one to three days. In that time, she can provide new users with the basic tools to get on with their own work, she said. "SPSS-X trainees fall into three

groups," Greisen said. "One group is people who are new to the organization and who may or may not know anything about statistical packages. Then there are people who have been working here a while and now have an application for the first time. They have a specific project and come to Computing Services to find out how to do it."

And then there are always people who just want to see if something's new, something they're going to be able to use somewhere down the

Greisen reported that the SPSS-X documentation is clear and readable. "If I sit down and write a few appli-cations for new users, then they know enough to go ahead on their own," she said.

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#### **WEEK OF APRIL 7**

APRIL 8-10, NEW YORK - Controlling Software Projects: Management, Measurement and Estima-tion. Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

APRIL 8-11, SAN ANTONIO — IMS/DC (Data Communications) Programming. Contact: On-Line Software International, Inc., Fort Lee Exware international, inc., For Lee Ex-ecutive Park, Two Executive Drive, Fort Lee, N.J. 07024. APRIL 8-12, NEW YORK — IMS Data Base Design. Contact: Sysed,

Inc., 35 W. 35th St., New York, N.Y.

APRIL 8-12, LOS ANGELES Data Base Development Workshop. Contact: Elise Rabalais, Learmonth & Burchett Management Systems, Inc., Suite 405, 2800 N. Loop W., Houston, Texas 77092.

APRIL 8-12, NEW YORK Vsam. Contact: Sysed, Inc., 35 W. 35th St., New York, N.Y. 10001.

APRIL 8-12, BOSTON — The James Martin Seminar. Contact:

Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402. Also being held April 15-19 in San Francisco

APRIL 8-12, NEW YORK - X.25 Packet-Switching Networks and Network Protocols and Standards. Contact: Systems Technology Forum, 9000 Fern Park Drive, Burke, Va.

APRIL 8-12, NEW YORK - Analysts Skills Workshop. Contact: Elise Rabalais, Learmonth & Burchett Management Systems, Inc., Suite 405, 2800 N. Loop W., Houston, Texas 77092

APRIL 9-10, WASHINGTON, D.C. — Managing Visual Displays in the Workplace. Contact: Computer and Business Equipment Manufacturers Association, Suite 500, 311 First St. N.W., Washington, D.C. 20001.

APRIL 9-10, DALLAS nessing Lotus 1-2-3 to Solve Your Business Problems. Contact: Professional Development Institute, North Texas State University, P.O. Box 13288, NT Station, Denton, Texas

APRIL 9-12, NEW YORK — CICS Applications Design. Contact: Sysed, Inc., 35 W. 35th St., New York, N.Y. 10001.

APRIL 10-12, SEATTLE -- Unix. Contact: Center for Advanced Professional Education, Suite 110, 1820 E. Garry St., Santa Ana, Calif. 92705. Also being held April 17-19 in Atlan-

APRIL 10-12, AURORA, COLO. - Eighth Annual Rocky Mountain Data Processing Exposition and Conference. Contact: Industrial Presentations West, Inc., 12371 E. Cor-

nell Ave., Aurora, Colo. 80014.

APRIL 10-12, NEW YORK —
Data Base Administration and Data
Resource Development. Software
Institute of America, 8 Windsor St.,

Andover, Mass. 01810.
APRIL 10-12, BELLEVUE,
WASH. — Hands-On Unix for Programmers. Contact: Kathy Howard, Specialized Systems Consultants, P.O. Box 7, Northgate Station, Seat-

tle, Wash. 98125. APRIL 10-12, ARLINGTON, VA. The IBM Personal Computer. Contact: Data-Tech Institute, P.O. Box 2429, Lakeview Plaza, Clifton, N.J. 07015

APRIL 11-12, COLUMBUS, OHIO

— Using Dbase III: Its Techniques
and Its Applications. Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940. Also being held April 18-19 in Oklahoma City.

APRIL 11-12, SUNNYVALE, CALIF. - Software Configuration Management, Contact: Data Processing Management Association Educational Foundation Seminars, c/o Technical Training Corp., Depart-ment SCM, P.O. Box 3608, Torrance, Calif. 90510. Also being held April 15-16 in Anaheim, Calif.

#### **WEEK OF APRIL 14**

APRIL 14-18, SAN FRANCISCO -Conference on Human Factors in Computing Systems. Contact: Donald Patterson, Lawrence Livermore National Laboratory, L-85, P.O. Box 808, Livermore, Calif. 94550.

APRIL 15-16, WASHINGTON, D.C. — Successful Software Management. Contact: Data Processing Management Association Education-al Foundation Seminars, c/o Technical Training Corp., Department SCM, P.O. Box 3608, Torrance, Calif. 90510.

APRIL 15-17, NEW YORK — Workshop for the Newly Appointed Data Security Officer. Contact: Marjorie Glazer, Computer Security Institute, 43 Boston Post Road, North-

boro, Mass. 01532. APRIL 15-17, WASHINGTON, D.C. — Systems Network Architecture. Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

APRIL 15-18, CHICAGO -Base: A Builder's Guide. Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

APRIL 15-18, WASHINGTON, D.C. — Intelexpo '85. Contact: U.S. Telecommunications Suppliers Asso ciation, 333 N. Michigan Ave., Chicago, Ill. 60601.

APRIL 15-19, HOUSTON — Structured Analysis and Design Techniques Workshop. Contact: Elise Rabalais, Learmonth & Burchett Management Systems, Inc., Suite 405, 2800 N. Loop W., Houston, Texas 77092.

See APRIL page 63

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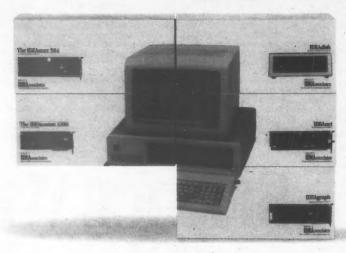
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#### APRIL from page 61

APRIL 15-19, NEW YORK—CICS Command-Level Programming. Contact: Sysed, Inc., 35 W. 35th St., New York, N.Y. 10001.
APRIL 15-19, WASHINGTON, D.C.—Knowledge Acquisition for Expert Systems: An Applications

Perspective on Planning and Developing the Prototype. Contact: M. James Naughton, Expert Knowledge Systems, Inc., 6313 Old Chesterbrook Road, McLean, Va. 22101. APRIL 15-19, SAN DIEGO

NCR Comten, Inc. User's Exchange Spring Conference. Contact: Anne Madison, NCR Comten, 2700 Snelling

Ave. N., St. Paul, Minn. 55113.

APRIL 15-19, ROCHESTER, N.Y.

Advanced Systems Analysis. Contact: Thomas Bisacquino, Associ-ation for Systems Management, 24587 Bagley Road, Cleveland, Ohio 44138.

APRIL 15-19, SAN FRANCISCO. CICS Internal Architecture. Contact: Sysed, Inc., 35 W. 35th St., New York, N.Y. 10001.

APRIL 15-19, WASHINGTON, D.C. — Managing Computer Professionals. Contact: Compumetrics sionals. Contact: Compumetrics Training Institute, P.O. Box 58383, Houston, Texas 77258.

APRIL 16-17, DALLAS — Advanced Lotus 1-2-3. Contact: Professional Development Institute, North Texas State University, P.O. Box 13288, NT Station, Denton, Texas 76203.

APRIL 16-18, ANAHEIM, Calif. Computer-Integrated Manufacturing and Communications Industrial Software Conference and Exposition. Contact: The Computer & Automated Systems Association of the Society of Manufacturing Engineers, Public Relations, P.O. Box 930, One SME Drive, Dearborn, Mich.

APRIL 16-19, BOSTON - Network Management/Technical Control Conference and Exposition. Contact: Conference Management Group, CW Communications, Inc., P.O. Box 880, Framingham, Mass. 01701

APRIL 17-18, NEW YORK — New Opportunities in Management Information. Contact: The Conference Board, Inc., P.O. Box 4026, Church Street Station, New York, N.Y. 10249.

APRIL 17-24, HANNOVER, WEST GERMANY — Hannover Fair '85. Contact: Hannover Fairs Information Center, P.O. Box 338, Whitehouse, N.J. 08888

APRIL 18-19, NEW YORK - Security in the Electronic Office, Contact: Computer Security Institute, 43 Boston Post Road, Northborough, Mass. 01532.

#### **WEEK OF APRIL 21**

APRIL 21-24, NASHVILLE — The 1985 Annual Conference of the Association for Systems Management. Contact: Association for Systems Management, 24587 Bagley Road,

Cleveland, Ohio 44138.

APRIL 22-23, WASHINGTON,
D.C. — How to Manage Data and Information as Resources. Contact:

formation as Resources. Contact:
Barnett Data Systems, 19 Orchard
Way N., Rockville, Md. 20854.
APRIL 22-24, LOS ANGELES—
Data Base: A Manager's Guide. Contact: Technology Transfer Institute,
741 10th St., Santa Monica, Calif.
90402 90402

APRIL 22-24, NEW YORK — Speech Tech '85 Voice Input/Out-put Applications Show. Contact: Media Dimensions, Inc., P.O. Box 1121, Gracie Station, New York, N.Y.

APRIL 22-25, CHICAGO — CICS Applications Design. Contact: Sysed, Inc., 35 W. 35th St., New York, N.Y. 10001.

APRIL 22-25, WASHINGTON, D.C. — National Conference on Decision Support Systems. Contact: Conference Manager, U.S. Professional Development Institute, 1620 Elton Road, Silver Spring, Md. 20903. APRIL 22-25, SAN FRANCISCO

The International Conference on Information Management. Contact: The Institute for Information Management, 510 Oakmead Pkwy., Sunnyvale, Calif. 94086.

APRIL 22-26, CHICAGO — CICS

Applications Design. Contact: Sysed, Inc., 35 W. 35th St., New York,

APRIL 22-26, WASHINGTON, D.C. — Design of Computer Operat-ing Systems: Concepts and Princis. Contact: George Washington University, Continuing Engineering Education, Washington, D.C. 20052.

APRIL 22-26, NEW YORK —
Data Base Development Workshop.

Contact: Elise Rabalais, Learmonth & Burchett Management Systems, Inc., Suite 405, 2800 N. Loop W., Houston,

APRIL 22-26, NEW YORK, N.Y. MVS JCL. Contact: Sysed, Inc., 35

W. 35th St., New York, N.Y. 10001.
APRIL 23-25, NEW YORK —
Teleprocessing Fundamentals. Contact: Amdahl Corp., National Education Center, M/S 302, P.O. Box 3470, 1250 E. Arques Ave., Sunnyvale,

APRIL 23-25, LOS ANGELES -Effective Management Techniques For Data Processing Managers and Project Leaders. Contact: Abbott, Galvani Associates, 1850 Union St.,

San Francisco, Calif. 94123.

APRIL 24-26, BOSTON — X.25
and Packet-Switching Networks. Contact: Systems Technology Forum, 9000 Fern Park Drive, Burke, Va.

APRIL 24-26, WASHINGTON, D.C. — How to Build and Use a Data and Information Resource Directory. Contact: Barnett Data Systems, 19 Orchard Way N., Rockville, Md.

APRIL 24-26, SAN FRANCISCO — Unix Systems Expo '85 — Spring. Contact: David Small, Computer Faire, Inc., 181 Wells Ave., Newton, Mass. 02159.

I didn't think they were going to break down last year, but they did and this year I think maybe they're going to break down but maybe they won't and what should I pay if they do and what should I pay if they don't...anyway.



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# **EDITORIAL**

# Let's just play by the rules

The world of international athletic competition — preeminently the Olympics — has long recognized the importance of standardized rules of play to ensure that all teams can compete on an equal footing, the home field advantage notwithstanding. It has typically been the more prominent, industrialized nations that have been foremost in setting these rules.

Today, the world's industrial superpowers,

Today, the world's industrial superpowers, the U.S. and Japan, are jockeying for position in the game of international trade. Japan, which long ago discarded the economic book of rules governing international trade, now finds that its chief rival is getting sick and tired of Japanese protectionist policies — and it's about time

Consider that, since the government-ordered breakup of AT&T, the value of Japanese telecommunications exports to the U.S. has more than tripled, going from \$600 million to \$2 billion, according to the U.S. Department of Commerce. The value of U.S. telecommunications exports to Japan in that time have remained flat at \$300 million.

In that time, Japan, Inc. has made many a public pronouncement of its intention to open up its multibillion-dollar telecommunications equipment market to foreign suppliers, a market dominated outside Japan by the U.S. Clearly, the rhetoric has not resulted in positive action, at least not as far as Commerce Department figures indicate. Meanwhile, the U.S. trade deficit owed to Japan has skyrocketed, and that has attracted the politicians' attention.

Commerce Secretary Malcolm Baldrige-recently canceled a visit to Japan to discuss the telecommunications trade issue when the Commerce Department discovered that the Japanese wanted to establish technical review committees to screen U.S. telecommunications imports. Instead, the U.S. will be reviewing its options to screen Japan's telecommunications exports to the U.S.

The rule makers decide they can't decide, and telecommunications equipment users in both countries face the prospect of limited suppliers and, ostensibly, the higher prices that oligopolistic competition brings. Consider that hard talk persuaded the Japanese to "voluntarily limit" auto exports to the U.S., and the price of American-made cars shot up along with U.S. automaker profits.

with U.S. automaker profits.

But until the Japanese start paying more than lip service to some hard trade figures, there seems little else the U.S. can do. Earlier this year [CW, Feb. 4], U.S. Sen. Frank R. Lautenburg (D-N.J.), founder of Automatic Data Processing, Inc., introduced retaliatory legislation aimed at combating Japanese attempts to eliminate conventional copyright protection for U.S. computer software. The bill states, essentially, that if the Japanese do it to us, we'll do it to them. The problem is that Japanese software isn't exactly a hot item in the U.S. market.

Telecommunications products are a different story. It is here that the Japan government's subtle and overt actions are clearly stiling the free flow of trade. No, one bad turn does not deserve another. But a little friendly persuasion, a la Lautenburg's tactics, that would cast our threats in law, just might get the ball rolling closer to mid-field, where everyone has an equal shot at it.



'Might I suggest, sir, the public defender's files under glass?'

#### LETTER

#### Software vendors: Back to basics

As I read the "Seeds of growth" software vendor article [CW, Dec. 31/Jan. 7] with its implications of the single software vendor for a company, I was reminded of those days — almost 20 years ago — when most companies were served by a single software vendor: IBM.

Although IBM just about gave its software away, the little guy with the good product, good service and some marketing skills was able to unseat this single software vendor in many companies around the world. In fact, the little guy did such a good job he created a new industry — the independent software product industry. Now it appears that the major players in this industry are all fighting each other to become a firm's single software vendor.

Perhaps you can be all things to all people; perhaps you can be a master at systems software, cross-industry applications, vertical markets, micro-mainframe links and other functions. The same issue of Computerworld featured an article on one independent vendor that went this route. In 1984, its profits dropped 87% and now, in the words of its chairman, it's "getting back to basics." Does that provide a message for the other major players in the software arena?

Al DeVito Wellesley, Mass.

#### COMPUTERWORLD

Donald E. Fagan

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# **VIEWPOINT**

# One year between CPU failure within reach



THE DATA CENTER John P. Murray

hen my company considered options for the replacement of our then-installed IBM 4300 CPUs, I became skeptical when one of the IBM managers working to move us to a 3083 said he felt the technology of the 3083 series had been brought to a performance and reliability level that would, in the not-too-distant future, provide the environment for a CPU mean time between failure of one full year (perhaps not on the 3083 series machines but probably on the follow-up series).

Now I do grant that significant strides have indeed been made in terms of reliability, availability and serviceability in information processing hardware. When you compare 4300 series CPUs with their predecessors, the performance improvement can only be described as very good. By comparison, those earlier CPUs, even though they may have seemed fairly reliable at the time, cannot compare with the performance level for uptime provided by the 4300 series.

Even given the improvements of the 4300 processors, claims of one year between failure on a CPU do indeed seem extravagant. One year? Come on. IBM.

Murray is director of management information services for Rayovac Corp., Madison, Wis., and author of Management Information Systems as a Corporate Resource, published by Dow Jones-Irwin.

Anyone who suffered (as many of us did) with tri-lead problems on those earlier CPUs has first-hand experience with examples of performance improvements that could not be described as "really good." Many of us are also on intimate terms with CPUs that, if they went for as long as three weeks between failure, we would begin to wonder if the computer operators had put power to the box.

box.
We once had to give the CPU up for four hours of preventive maintenance every week (on the prime shift, of course) in order to keep it functioning. And even with that effort, the CPU failed with what often appeared to be sinister alacrity.

#### Downtime a recurring problem

Many of us spent much of our young adulthood in three-way phone conversations in the middle of the night with a computer operator and vendor support representative attempting to bring a somnolent, if not comatose, CPU back to life. As we worked to bring renewed vitality to the CPU, we would also be mentally revising production schedules to determine how we were going to recover the lost time when the system was made available.

So much for the trip down memory lane. Those who have endured or are experiencing such situations know the frustration associated with CPU failure and the often considerable strain involved in getting back on track, particularly in the event of a prolonged siege of downtime. I experienced almost three full days of total downtime, which was a most traumatic experience!

The latest generation of IBM mainframes illustrates that vendors have made progress in terms of their ability to provide information processing hardware — particularly the CPU, which has a

high performance level.

Our experience with our 3083 Model E supports that statement. On Dec. 30, 1983, we installed our CPU, and as of September 1984, we have yet to experience any CPU failure. We did experience a problem the second day we had the CPU: A circuit breaker tripped, and it took the customer engineer, working over the phone with one of the computer operators, 15 minutes to locate the problem and rest the system. But since then, we've had no problems.

#### Records will probably be broken

I don't know if approximately 4,500 hours without a CPU failure is a world record (I will claim it until someone says he's done better), but it certainly is a most welcome experience for us. We may indeed be on our way to one-year periods between failures — only time, I suppose, will tell. There is, however, one caveat: This record claim is based upon a single, stand-alone processor, not on a fault-tolerant, redundant hardware configuration. This is not, even though it may appear to be, an endorsement for IBM hardware. The point is that hardware performance is getting better. We often take the same approach to the vendors who serve us as do the MIS clients we serve: We tend to forget the progress made over a period of time, and we focus on the immediate irritations, whatever they may be.

This is simply one more indication of the advantage to be found in moving to more advanced information processing technology. With the myriad problems MIS managers face, being able to rely upon a more stable CPU environment must be viewed as a real plus.

See **DOWNTIME** page 66

# Time estimates oblige project adjustments



MANAGEMENT MATRIX Walter F. Cuirle

he time management gurus recommend that we make up a list every day, then set priorities for the items on the list. That seems easy enough. One list I remember has an extra step for managers. Before you set the priorities, put each item into one of four categories: delete, delegate, delay and do.

It sounds so simple. Until you're sitting there at 9 a.m., usually on a Monday, and get this call. "Ah, we'll need a revision on those budget figures for the 1 p.m. meeting today. Sorry to give you such short notice; ballpark figures will do." And people wonder why you're surly.

In situations like this, there's often only one person who has even half a chance to do the job in time — you. Delegation would be oh, so nice, if only there was somebody to whom you could delegate this sort of thing. Actually, there is: You probably couldn't have done it the morning of the telephone call, but with proper advance planning and delegation of budget preparation, you could have collected what you needed to know in

a form that let you do that revision by the time of the meeting.

At this point, some managers would object that budget preparation cannot be effectively delegated, contending that going over the figures to make sure they are right takes almost the same amount of time. This is true if you try to pass the entire job on to subordinates.

operation, dollar estimates are secondary to reliable time estimates because skilled time is what you really sell, and that drives everything else. You may not feel entirely comfortable turning a complete work-up over to one of your project leaders, but you should be able to get a reliable time estimate there.

Your position, in part, requires

77

Many managers say the weak point in estimates prepared by subordinates is the money. Yet, for a DP operation, dollar estimates are secondary to reliable time estimates because skilled time is what you really sell, and that drives everything else.

Look at it this way — preparation of estimates for the entire department is made up of estimates for the individual projects. If you delegate full preparation for a project, you'll get back a bottom-line figure for the project and some breakdowns. But when you submit it, you are accountable. So the tendency is to go over the delegated areas with a fine-tooth comb; some people will do this to the point where they say they could have done it just as fast themselves.

Many managers say the weak point in estimates prepared by subordinates is the money. Yet, for a DP that you make the department come out on budget. Project leaders' positions, in part, require that they make a project come out on time — an ability that gives the position strength for delegated responsibility, but one that is also a potential pitfall in the estimates you will get back.

Good project leaders tend to squeeze and trim. That's why they are good. If you have a scheduling crunch, one of them can usually shift something from one person to another in the project group and free up a few hours here and there to put the fire out and still get the current job

done. This strength in supervisory skills — knowing specifically who does what and how well — is the potential weakness in preparing time estimates. The project may get done on time because the supervisor knows the programmers and support staff personally, but time estimates done for budget or cost estimate purposes really require looking at programmer resources as job descriptions.

First, ask for those time estimates in some common format. If your staff has fairly well-defined job descriptions, ask for the estimates in terms of hours in each category. Then, to avoid problems, your supervisors might attach one person's abilities to each of those categories, make the supervisor accountable for time estimates in the same ways you are accountable for time estimates and for the overall budget. They must justify the time resources they say they need. Once the estimate is justified, the supervisors get it, but no more. Of course, you'll need to know where they spend the allocated time, but accounting system is probably already set up for charge backs by account number or job code or something of the sort.

Now, instead of a list of projects on which you must hang numbers, you have a list of projects and estimated hours needed to complete them. Let's say you have it broken down by job levels A through F. You

See PROJECT page 66

Cuirle is a senior associate with Nicholas DeMaio Associates in Bryn Mawr, Pa.

#### VIEWPOINT



LETTERS

#### Legal remedies encouraged

I would like to comment generally on the article "Don't rely on the law to stop computer crime," [CW, Dec. 17]. The specificity of legislation to define computer-related crimes is not the primary difficulty in isolating and prosecuting this type of whitecollar crime. Reliance upon the mis-taken belief that nonlegal remedies are the primary defense against computer-related crime is dangerously naive.

As long as high technology is a

predominant factor in business and industry, there will be computer crime. Like a bank safe, any computer system that can be legitimately accessed can be illegitimately accessed. Denying this fact will not make this real possibility disappear.

The problem begins with computer-dependent businesses and industries and their naive reliance upon self help. When faced with potential adverse publicity, high-tech-oriented companies are notorious for their unwillingness to prosecute criminal activity, even under traditional embezzlement and theft statutes. The fear of jeopardizing the secrecy of valued trade secrets is another reason for this apathy. Some companies even hire or promote criminal violators in an effort to correct or conceal vulnerable security systems. The bottom line is this: even armed with perfect computer crime laws, no able prosecutor can win a case if the victim is unwilling to admit the crime has occurred.

This leads to the next problem of prosecuting computer-related crimes, the prosecutors. A prosecutor may not take the time to understand the complex technology necessary to prove a computer crime because he can bring to trial several more "mundane" cases in the same amount of time. The situation may be even more perplexing to a prosecutor when the victim is just as reluctant to have the case heard.

The article states that only 21 states have enacted specific comput-er-crime legislation. This means that 29 states do not even acknowledge a problem. What deterrence can there be if computer abuse is not a recognized crime? The lack of comprehensive federal or state legislation is not the fault of any legislature but rather that of the computer-oriented businesses and industries.

I offer the following laws to show what business and industry in Louisiana have done to fill this void:

■ The Uniform Trade Secrets Law defines criminal misappropriation of trade secrets and provides civil remedy for violations.

The Software Licensing Enforcement Act provides civil remedy for violations of "shrink-wrap" or "box-top" licensing agreements com-monly found in off-the-shelf software packages.

■ The Computer-related Crime Act defines computer-related crimes and provides penalties for violations. Unlike the "innovative" Florida statute mentioned in the article, this act excludes "computer-driven devices" where the components have the sole function of controlling the device for the single purpose for which the device is intended, such as digital watches, microwave ovens and airconditioning thermostats.

Instead of burying their collective heads in the sand, companies should be taking an active part in the legislative process to develop practical and enforceable laws.

PROJECT from page 65

have, or can easily figure out, the

per-hour cost of each resource. You

have numbers for overhead. You have the information you need for es-

timating programming and supervi-

sory resources for the budget.
With a reliable estimate of the

time required, you can now play be-

lievable spreadsheet games. You know the total hours you need in dif-

ferent categories for the coming peri-

od and how many you have available. Suppose you need more than you have. The time estimates are pretty

much insensitive to overtime, new hire and contract programmer op-

tions, even though the money is not. Now, you not only have options,

but you can offer them as well. You

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#### **DOWNTIME** from page 65

So I have become somewhat less skeptical of the claim of the IBM manager about the improved performance than was the case in the fall of 1983. One year mean time between failure may indeed be attainable. After we get used to that level of service, the occurrence of a failure once each year will seem just as traumatic as once every few weeks as it was in the past.

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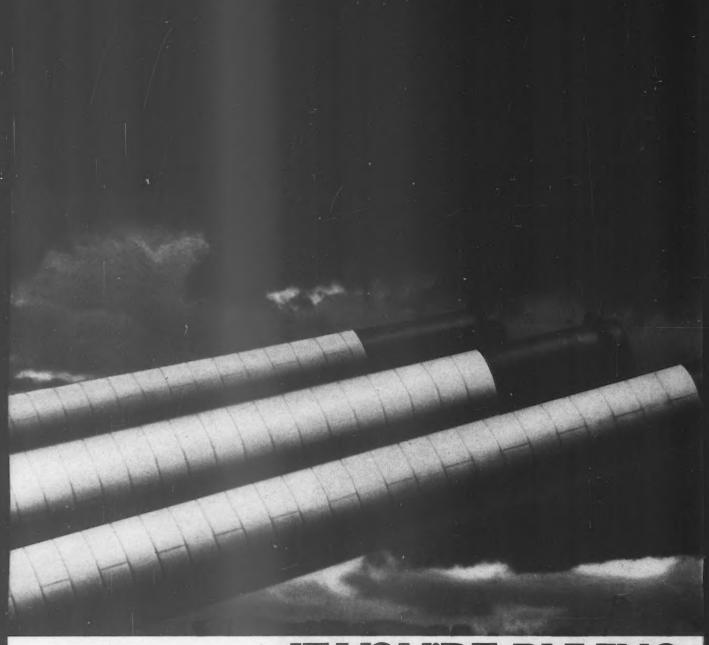
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# **SOFTWARE & SERVICES**

# Uccel still banking on systems market

By John Gallant

"You oughta dance with the one who brung ya.'

That Texas-style aphorism, according to Paul Newton, Uccel Corp. senior vicepresident, says a great deal about the future of the rapidly growing Dallas-based software and services company. "I am not a native Texan, but I think

that expression is relevant to Uccel," he said.

For those who wonder whether Uccel plans to diminish its efforts in the systems software arena in the wake of its announced intention to mount a vigorous assault — based on a \$20 million develop-ment project — on the emerging banking applications market, the answer is clearly

'no."
"The most profitable and successful business within the company is systems

software," said Newton, who is responsible for mainframe software operations at Uccel (formerly University Computing "While we are definitely committed

now to Leap [Uccel's Leading Edge Applications Project] and the banking marketplace, there is a balance, and the first priority remains

systems software." Indeed. Systems soft-ware has come to rep-

resent the longest prong in the trident-like mainframe ware strategy Uccel softevolved. In a recent interview with Computerworld, Newton said Uccel earned some \$75 million last year from combined sales of its mainframe

applications and systems software and from the sale of its software products in

ternationally. Uccel garnered a very sizable chunk of that revenue from its widely installed systems products, such as the UCC-1 and UCC-3 tape and disk manage-

ment systems and the UCC-7 production work load management system

Having earned a solid reputa-tion in the DP community through such products, Newton said, Uccel plans to intro-duce further systems software offerings aimed at data center management. "Through internal development and external acquisition, we intend to introduce products targeted at capacity planning and performance measurement," he said. 'We are also working on secu-

rity and networking products and, finally, See UCCEL page 98 Burroughs Corp. announced applications software targeted to financial institutions/72

Digital Equipment Corp. enhanced the applications integration capabilities of its All-In-One office software/72

A high-volume data entry system for IBM mainframes was introduced by Applied Data Research, Inc./72

Datapoint Corp. unveiled communications and emulation software for its 8800 and 8600 processors/76

■ NEC Information Systems, Inc. announced a microcomputermainframe communications link for its Advanced Personal Computer series/77



Newton

# Maintenance protects assets

By John Gallant CW Staff

"Maintenance started one minute after the first application was developed. The problem of maintaining existing applications affects a wide variety of organizations, no matter what

size staff they maintain or the nature of their operations. Everyone has this problem of what to do with the systems their predecessors left them."

- Nicholas Zvegintzov, Editor, "Software Maintenance News"

To understand the importance of software maintenance, it is necessary to understand the importance of software to an organization.

Consider this. A software library consisting of 3,000 programs, each containing 2,000 lines of code, would cost at least \$150 million to replace. That replacement value, according to Mary Kay Kluge, senior manager with the Catalyst Group of Peat, Marwick, Mitchell & Co. in

Chicago, is based on an average develop-See UPKEEP page 97 Amdahl nixes IBM extension

VM/XA support plan for 580 series scrapped

By Jeffry Beeler CW West Coast Bureau

SUNNYVALE, Calif.- Amdahl Corp. will continue to supply its own version of IBM's VM Migration Aid rather than support a recent extension to that Big Blue of-

During a briefing session at corporate headquarters here last month, David Anderson, Amdahl's director of program products, vetoed the idea of making IBM's VM/XA System Facility available to users of Amdahl's 580 series CPUs.

Instead. Amdahl intends to continue offering users its Multiple Domain Feature (MDF), which reportedly still boasts performance advantages over IBM's recently enhanced VM Migration Aid [CW, Feb. 18], Anderson said.

Announced alongside industry giant IBM's Sierra series processors, the VM/XA System Facility reportedly extends the VM Migration Aid, which allows multiple operating systems to run on the same ma-chine. In particular, the VM/XA System Facility is said to improve the perfor-See AMDAHL page 95

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**DBMS/90** 

Remote Computing

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## Applications upkeep full-time DP job

By Maura McEnaney

Bringing up the subject of software aintenance with an MIS manager is likely to evoke scowls and frowns of de-

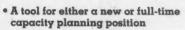
For Michael Miller, supervisor of sys-tem support at Union Oil Co. of Califor-nia's marketing and refining division in Schumburg, Ill., the topic of maintenance does just that.

At Info/Central: The Management Ex-

position & Conference held in Chicago re cently, Miller told Computerworld his company is committed to 280 hours of naintenance each week. About seven of the company's 52 programmers are assigned full time to the maintenance of applications running on Union Oil's IBM 3033 and 3084 mainframes.

At Union Oil, software maintenance mean anything from removing system bugs to implementing product up-See SUPPORT page 98

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#### **SOFTWARE & SERVICES**

## ADR offers production data entry system

PRINCETON, N.J. — Applied Data Research, Inc. (ADR) has announced the ADR/DE-II high-volume production data entry and distributed data source capture system, running under IBM's CICS.

A spokesman said ADR/DE-II allows data to be entered directly from on-line display terminals. ADR/DE-II features include interactive services for data entry definition and maintenance, entry and verification and control over the production environment. It supports on-line administrative maintenance and inquiry facilities, as well as data extraction services and the company's Datacom/DB file backup and recovery utilities, according to the spokesman.

ADR/DE-II is compatible with the ADR/Datacom System. Interactive on-line functions that include a full screen painting mode and require no programming and compilations define and maintain data entry applications.

ADR/DE-II provides interactive entry, verify and pag-

ing facilities for production terminal operators. Data stacks are created dynamically under operator commands and are associated with individual data entry applications.

Selected data can be retrieved from the ADR/DE-II data base, reformatted to reflect applications requirements and used by batch applications. Data can also be transferred directly into a user's Datacom/DB data base.

transferred directly into a user's Datacom/DB data base. ADR/DE-II is available under OS/VSI, MVS and MVS/XA environments on the IBM 370, 30 series and 4300 processors and their plug-compatible equivalents. The product's scheduled availability for DOS/VSE environments is in the second quarter of 1985.

The permanent license price for ADR/DE-II is \$24,500 for OS environments, \$19,500 for DOS environments and \$16,600 for IBM Models 4321, 4331, 4361, 370/115, 370/125, 370/135, 370/136 or plug-compatible equivalents.

125, 370/135, 370/138 or plug-compatible equivalents. ADR is located at Rt. 206 and Orchard Road, CN-8, Princeton, N.J. 08540.

## DEC tools enhance All-In-One

MAYNARD, Mass. — Digital Equipment Corp. recently introduced an applications integration standard, an integration kit and a package for sales and marketing support for its All-In-One office software.

A company spokesman said the All-in-One Integration Kit documents DEC's All-In-One integration standard and allows departmental applications from DEC, its customers and third-party vendors to be integrated with All-In-One, providing consistent menus, interfaces and shared data and text files. The integration standard is the design of the file and human interface architecture built into the second version of All-In-One, announced by DEC in December [CW, Dec. 17]

The spokesman said DEC's All-In-One system for sales and marketing consists of three components: a base system for tracking account information, a field reporting module and a lead management module. The field reporting module includes expense tracking to determine sales profitability, facilities for monitoring sales activity and call reporting capabilities. The lead management module provides forms for listing and routing sales leads and for creating sales

and marketing reports.
Other DEC office products, such as the All-In-One voice system, can be integrated with the sales and marketing system. The All-In-One system for sales and marketing is priced between \$6,600 and \$12,650 depending on the VAX system configuration. The All-In-One Integration Kit is priced at \$150. Both products will be available in June.

DEC is located at 146 Main St., Maynard, Mass. 01754.

# Burroughs adds finance tools

DETROIT — Burroughs Corp. has announced real-time data base applications software called Global Financial System (GFS) designed for financial institutions. The package runs on the company's B2000 through B7000 CPIIs and the Burroughs' A9 series

CPUs and the Burroughs' A\theta series. A spokesman said the system includes two sets of support and accounting modules, each with access to Burroughs' Data Management System II data base management system. The Financial Access Control and Transaction Systems set of modules was designed to collect and route customer information, gather and store data, manage system operations and handle customer service tasks.

The Accounting Applications modules perform financial and accounting functions. Variable features and values of the software can be altered.

Monthly license fees for GFS begin at \$4,300. The product is scheduled to be available in the second quarter. Burroughs is located at Burroughs Place, Detroit, Mich. 48232.

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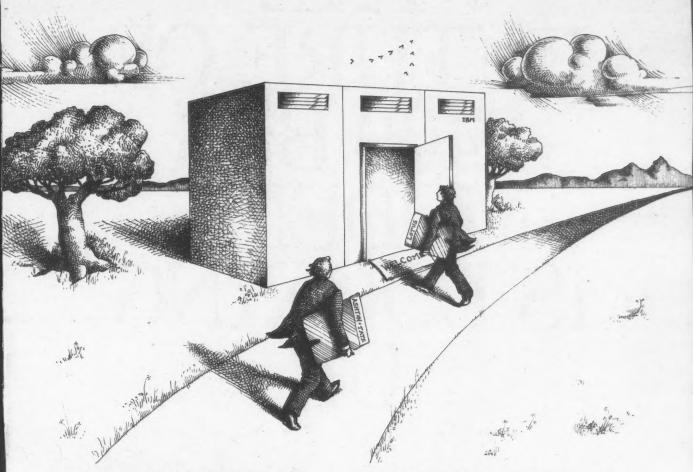
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a de facto standard for tying these popular software packages to micro-to-mainframe communications. PC WEEK, July 24, 1984 Unlike many micro-to-mainframe links, Lotus/Answer and dBASE/Answer provide universal access to mainframe files. So you'll get all the vital, current and accurate information that you need most

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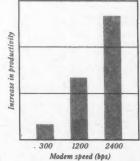
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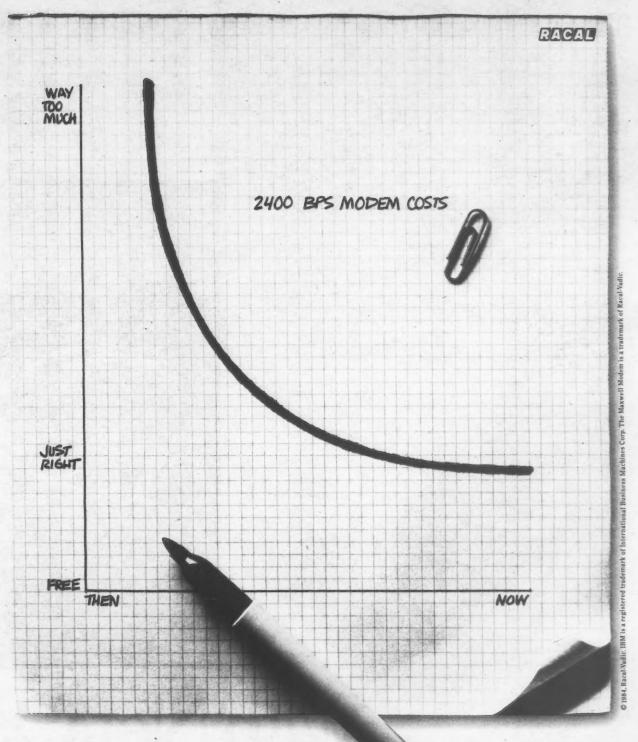
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#### **SOFTWARE & SERVICES**

#### Para Research unveils financial tools for IBM CPUs

GLOUCESTER, Mass. — Para Research, Inc. has announced three products for the IBM System/34 and System/36 processors: Accounts Receivable 2.0 for the company's set of integrated accounting packages, Release 1.2 of its Easy Calc Financial Modeling System and Release 1.4 of its Fixed Assets Financial System.

A company spokesman said Accounts Receivable 2.0 allows users at any terminal to track receivables. The product's Search feature enables users to find accounts without an account number and with an approximation

of a name. The system displays open invoices and enables users to book checks received or to bill a customer on a balance-forward basis. As an update, Accounts Receivable 2.0 is priced at \$500, including a year of maintenance; for new users, the package costs \$2,500.

Easy Calc Financial Modeling 1.2 features "if-thenelse" logic and job streaming for applications such as sales commissions, tax calculations and volume discounted prices. Other 1.2 features include a command key that moves one screen in one jump and job streaming for calculating several models at once and consolidating them into one for printing. As an update, Easy Calc 1.2 is priced

at \$200; for new users, the package costs \$1,500.

Fixed Assets Financial System 1.4 permits users to depreciate an asset using the accelerated cost recovery system with a reduced basis. It also offers a choice of 12 asset depreciation methods and allows depreciation of any asset by any three methods, producing a report for

each. The asset description field has been enlarged two times to 40 characters, and two user-defined fields have been added to the asset master file. As an update, Fixed Assets 34/36 is priced at \$200; for new users, the package costs \$2,000.

Para Research is located at

Para Research is located at 85 Eastern Ave., Gloucester, Mass. 01930.

## Datapoint offers 3270 gateway

SAN ANTONIO — Datapoint Corp. has announced an IBM 3270 gateway for users of its RMS operating system, a teletype communications gateway for access to information networks and a virtual communications facility supporting the X.25 protocol.

According to a spokesman, RMS3274 is an IBM 3274 Systems Network Architecture interactive cluster controller, 3278 workstation and 3287 printer emulation package. The product allows RMS users to access information on the IBM 3270, output information to a local printer or disk and integrate the information with Datapoint files. The 3274 emulation is supported on Datapoint 8800

and 8600 processors.

Datapoint's Uniterm software integrates data accessed from information networks such as Dun &
Bradstreet Computing Services and Dow Jones Information Services. Uniterm allows a multifunction 8600
processor to emulate a standard teletype device to access information sources and
communicate with IBM, Sperry Corp. and Burroughs
Corp. mainframes.

VCF 1.1 is a virtual communications facility for the X.25 protocol. Structured according to the Open Systems Interconnect reference model, it supports 1980 CCITT X.25 as the transport mechanism for Datapoint-to-Datapoint communications. The software operates on a Datapoint 8600 processor.

RMS3274 and VCF 1.1 are priced at \$1,500 per copy. Uniterm is licensed for \$1,000.

Datapoint is located at 9725 Datapoint Drive, San Antonio, Texas 78284.

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#### **SOFTWARE & SERVICES**

#### NEC adds Acculink to its micro software

BOXBORO, Mass. - NEC Information Systems, Inc. has announced the addition the Acculink asynchronous communications - package to its library of software for its Advanced Personal Computer and Advanced Personal Computer III.

A company spokesman said the Acculink package, developed by IE Systems,

Inc., allows users to exchange data between the micros and minicomputers or mainframes. The package works with processors from IBM (units operating under CMS); Digital Equipment Corp.; Data General Corp.; Honeywell, Inc.; Prime Computer, Inc.; Hewlett-Packard Co; and Control Data Corp.

Acculink also permits lo-

cal and remote communications between the micros. Interminal teractive emuinclude Digital lations Equipment Corp.'s VT100 and VT52 and IBM's 3101-C. Acculink's data link mode permits transfer of Ascii and binary files to and from other micro, mini and main-frame computers. The NEC 16-bit Advanced Personal

Computer runs Microsoft Corp.'s MS-DOS and Digital earch, Inc.'s CPM 86 operating systems. The Advanced Personal Computer III is packaged with MS-DOS 2.11 and Microsoft's GW Basic.

Acculink is priced at \$245, the vendor said.

NEC is located at 1414 Massachusetts Ave., Boxboro, Mass. 01719.

#### Mainframe graphics package out

BOULDER, Colo. — Precision Visuals, Inc. has announced Picsure, an interactive graphics softwar package for IBM mainframe software under VM/CMS or MVS/TSO and Digital Equipment Corp. VAX processors under VMS or AT&T's Unix System V.

A vendor spokesman said Picsure features include online tutorials, screen prompts and more 50 predefined lay-outs of pie charts, bar charts and X-Y plots. Using the predefined layouts, users enter data, titles and appropriate

Picsure is said to adjust the axis on plots and bar graphs to accommodate the data and select colors and patterns to distinguish seg-

#### Windowing available

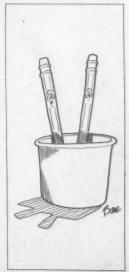
A windowing feature permits the display of two or more graphics on specified areas of the same screen or sheet.

Text alternatives include 24 fonts and four text qualities of filled, outline, stroke and hardware. Picsure data sets can be entered from the keyboard or accessed from data files.

Picsure uses the same device drivers used by the ven-dor's DI-3000 and GK-2000 graphics tools packages and consumes approximately 750K bytes of disk storage.

The price for Picsure nges from \$6,500 to ranges \$25,000, depending on CPU, the vendor said.

More information on Picsure is available from Precision Visuals, which is located at 6260 Lookout Road, Boulder, Colo. 80301.



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With Net/One, you get not only the equipment to bring it all together; you get the dedicated intelligence and judgment of Ungermann-Bass Project Management to make it all work.

To keep it all working, you get the continuing support available from our experienced field service personnel, locally and regionally, as well as from our Santa Clara headquarters.

If you're exploring LAN possibilities. these are only a few of the reasons to include us in the loop. Give us a call, and let's talk about some of the others.

Ungermann-Bass, Inc., 2560 Mission College Blvd., Santa Clara, CA 95050, (408) 496-0111.

Net/One from Ungermann-Bass

e, your LAN are infinite.

Getting along with all kinds of people is one of the most endearing qualities of the NCR PC4.

It gets along with bosses, secretaries, accountants, engineers, lawyers, everybody.

Even first-timers take a liking to this computer the moment they take it out of the box.

Perhaps its good looks have a lot to do with this. But its beauty is more than skin deep.

Its smart, integrated cabinet takes up precious little space on your desk.

There are no complicated wires or clumsy boxes to set up. All you have to do is plug it in.

The keyboard is the same familiar layout your fingers know and love. Plus a couple of nice touches. Like separate

cursor keys and a separate numeric keypad to make it easier to work with programs that have long lists and lots of numbers.

The NCR PC even comes with two special self-teaching programs that will have you computing in a matter of minutes. NCR PAL shows you how to use the computer itself. NCR TUTOR introduces you to word processing, spreadsheets and other popular business programs.

And if you get lost along the way, there's a built-in HELP command you type in to get you back on track.

Add all this up and you start to see why the NCR PC is so compatible with people.

Of course, it's also compatible with thousands of programs available at

can add on all sorts of helpful accessories. Like a printer, a modem for electronic mail, a mouse for even easier operation and all the memory you need—up to 640K.

If you'd like to meet this terrific computer, go to your nearest Authorized NCR Personal Computer Dealer.

Just ask for the computer everybody gets along with.

For the name of your nearest dealer, call toll-free: 1-800-544-3333. In Nebraska call: 1-800-343-4300.



#### **SOFTWARE & SERVICES**

#### SYSTEMS SOFTWARE

nounced CICS/Replay, a tool for automated regression testing of applications, automated stress test-ing of upgrades to IBM's CICS and tuning and capacity planning for

According to a spokesman, applications screen images, captured from the user's test or product CICS system using the company's CICS/Common, can be automatically reexecuted under CICS using CICS/Replay.

In applications development, captured screen images can be used as a test set after changes or enhancements are made. Any differences between reexecuted screen images are automatically compared with the original test set.

In the technical support area, a test set of screen images can be used by systems programmers to stress test CICS after maintenance up-grades have been applied, or new releases installed.

CICS/Replay operates under CICS Release 1.5 or later, or IBM's DOS/ VSE, VS1 and MVS operating systems. The perpetual license fee for CICS/Replay is \$5,000 for OS and \$4,000 for VSE installations

Highlander Systems, 335 S. 100 E., Orem, Utah 84058.

■ Nittany Systems, Inc. has announced Version 2 of its Softbox-W software, which allows users of Westinghouse Electric Corp.'s Westi teleprocessing monitor to convert to IBM's CICS without re-writing or recompiling applications programs or running two teleprocessing monitors. The package runs on IBM mainframes in the CICS en-

A spokesman said Version 2 of Softbox-W supports subtasking of applications under CICS. Applications, including those that perform their own nonstandard file access, which would normally cause the CICS partition to wait until completion of applications execution, may now be run in a subpartition to free the CICS partition and to enhance execution time.

perpetual-license for Version 2 of Softbox-W is priced at \$20,000; according to the vendor.

Nittany Systems, P.O. Box 452, Boalsburg, Pa. 16827.

■ Candle Corp. has announced the Performance Reporting Option for its Epilog/MVS Installation Performance Management System for IBM's MVS.

A spokesman said the PRO/MVS option provides access to Epilog degradation and resource data via SAS Institute, Inc.'s SAS and SAS/Graph. PRO/MVS provides degradation data in pie and bar charts, line graphs and tabular formats showing the impact of wait reasons on system perfor-mance. Available in hard copy or via TSO, the reports describe batch and

TSO performance trends.
PRO/MVS is scheduled to be available in the second quarter of 1985.

The permanent license fee for PRO/MVS is \$3,500; additional processors can be supported for \$2,500

Candle, Suite 2404, 10880 Wilshire Blvd., Los Angeles, Calif. 90024.

Optimation, Inc. (OI) has announced a Hewlett-Packard Co. 2623 graphics terminal emulator that provides a link between the HP 200 series desktops and the HP 9000, HP 1000 and HP 3000 proces-

According to a spokesman, the OI 2623 Terminal Emulator enables an HP 200 user to operate the workstation as an HP 2363 terminal and to log on to a host computer via RS-232 communications lines.

The product is said to support both text and graphics modes, as well as Ascii file transfers to and from the host. OI's terminal emulator supports the Remote Terminal Emulator full screen editor and command stack features, as well as most of the utilities on the host machine.

The OI 2623 costs \$550.

OI, 81 Faxon Road, Atherton, Calif. 94025.

■ Calview Management, Inc. has announced VM/DMR software, which provides information and analysis designed to aid in managing Dasd space in an IBM VM envi-

A spokesman said VM/DMR creates a systemwide data base of Dasd usage statistics and then produces a hierarchical series of summary and detail reports on Dasd space use.

permanent license price for VM/DMR is \$4,000.

Calview Management, Suite 378, 560 S. Hartz Ave., Danville, Calif. 94526.

■ Computer Associates International, Inc. has announced a disk space accounting (DSA) option to its Ca-Jars job accounting package for IBM OS/MVS users.

A spokesman said the DSA component adds to Ca-Jars a chargeback mechanism that monitors all disk usage in several cycles: initial; enable; update; and billing. During the initial cycle, the volume table of contents of every Dasd volume participating in disk space billing is scanned to create a DSA master file, representing all permanent data sets in the Dasd configuration of a selected subset of vol-

During the enable cycle, every event processed by the Dasd space management component of MVS is recorded by DSA, capturing changes to every volume table of contents on the system.

In the update cycle, a file of DSA transactions is used to update the DSA master file. The billing cycle applies the charging algorithms to the records on the DSA master file and creates a report of the charges incurred by each user.

The Ca-Jars DSA component sup-ports MVS/SP 1.3.3 or above, including MVS/XA. The price for the Ca-Jars DSA option is \$7,500. Computer Associates, 125 Jericho

Tnpk., Jericho, N.Y. 11753.

SCA Products and Services has introduced its Gateway PC communications software, which allows IBM Personal Computer users to access mainframe computers running under IBM's VM operating system.

Gateway PC is said to allow the IBM Personal Computer to emulate an IBM 3270 terminal using a Digital Communications Associates, Inc. Irma board or an IBM 3101 terminal

using an asynchronous communications protocol.

It automatically uses mainframe data to build formatted spreadsheets under Lotus Development Corp.'s 1-

Gateway PC is said to offer full screen file selection, keyboard redefi nition and keyboard shorthand: The software consists of a Gateway module on the mainframe and a corresponding module for the Personal Computer.

Gateway PC is priced at \$18,000 for each mainframe module and be-tween \$200 and \$350 per Personal Computer module.

SCA Products and Services, 353 Lexington Ave., New York, N.Y.

Versatile Technologies Corp. has announced MVS/Ware productivity enhancement tools for IBM OS/ MVS users, consisting of 43 products in categories of IBM TSO commands, utility programs and a subroutine library.

According to a spokesman for Versatile Technologies, products in the TSO command category include: MWDASDL, a Dasd volume contents list featuring selection criteria, TSO foreground/batch processing and a data set listing to a terminal or out-put file; MWINVCP for command development and testing; and MWADV for clearing the IBM 3270 display on any terminal type, allowing a full page of data on the screen at one

Continued on page 80

#### **CGA** introduces security system for IBM's VM

HOLMDEL, N.J. — CGA Software Products Group has announced stand-alone security system for IBM VM environments.

According to a vendor spokesman, Top Secret/VM uses the standard VM Access Control Interface and incorporates features of CGA's Top Secret/MVS IBM MVS security product. An administrator can identify an unlimited number of users to the sys tem, which controls access to host facilities and resources

The product provides a utility program that examines historical access to system resources and associates users and owners with data sets and resources. A four-tiered hierarchy separates users, profiles, depart-ments and divisions. Each hierarchical level can be assigned a level of authority to control or audit system resources and is automatically activated when the system is loaded.
All Top Secret/VM files can be

shared across multiple VM systems or throughout a mixed VM/MVS environment.

Top Secret/VM will be available in the third quarter. The introductory lease price will be \$5,000 per year.

CGA Software Products Group is located at 960 Holmdel Road, Holmdel. N.J. 07733

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- Supports all CICS startup options
- Requires no modifications to CICS

- Allocates/deallocates user and transient data files
- Allocates/deallocates files by groups Automatically opens and closes files
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- Provides security exit and audit trail

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- Automatic time-initiated allocation/deallocation
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- O/S core manager

#### DADS-Productivity Software from STAR

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#### SOFTWARE & SERVICES

Continued from page 79

Products in the utilities category include MWECODE+ for generating assembler language source code from Cobol, assembler, Fortran and PL/1coded programs; MWSCHED, an autoscheduler; job MWPGMMON, a program execution monitor.

Products in the subroutine library include MWINCORE, a table sort for sorting fixed or variable-length re-cords without work file I/O; MWBSRCH, a binary table search for finding records from fixed or variable-length entry tables with a binasearch; and MWBLKLET, for printing block letters and user-defined logos.

Permanent license fees or MVS/ Ware products range from \$200 to

VTC, P.O. Box 20987, Orlando,

Marathon Software & Services, Inc. has announced its A Procedure Editor/Extended (APE/X) soft-ware utility, available for users of Oxford Software Corp.'s UFO/CICS software running on IBM main-frames under IBM's DOS/VSE or OS/VS1/MVS.

A spokesman said APE/X includes full-function editors for UFO procedisplay definition and Help modules and enhanced development and debugging features.

permanent license for APE/X, available for UFO/CICS Releases 2.4 and 2.5, is priced at \$1,250 for a single CPU or \$2,250 for a site, according to the vendor.

Marathon Software, 145 Porter Ave., Bergenfield, N.J. 07621.

Kisco Information Systems has introduced a utility package for the IBM System/36 minicomputer that extracts a report from the System/ 36 print spool, converts it into a format compatible with most computer output microfilm (COM) processors and writes the report to tape

COM-X/36 allows the IBM 8809 tape drive to produce reports on microfilm. The system allows for variable blocking on the output tape and can create either standard labeled or nonlabeled tapes, a spokesman said. The output tapes are ready for direct processing on most COM processors.

COM-X/36 is priced at \$125. Kisco Information Systems, Suite 18, 120 Beverly St., Mount Kisco, N.Y.

■ Gejac, Inc. has announced that

Hasp+, its communications package utility for Digital Equipment Corp.'s VAX-11 series CPUs, has been updated to run on Version 4 of DEC's VMS operating system.

VAX/VMS Hasp+ is a communica-tions protocol intended for bulk transfer of data or performing re-mote job entry (RJE) to mainframes. According to a spokesman, jobs may be exchanged with the batch queue of any VAX/VMS system running Hasp+ with the RJE Host Functionality Option. The features allows RJE users to access the batch capabilities of a VMS system acting as the mainframe in an RJE entry network.

Version 4 also provides support for DEC's DMF-32 multifunction board for VAX/VMS systems, allowing users to use direct memory access (DMA) capabilities at speeds up to 56K bit/sec. DMF-32 also provides eight DMA asynchronous lines and a DMA line printer interface. Automat-

ic dialing is also provided.

VAX/VMS Hasp+ can be licensed. for \$5,500.

Gejac, P.O. Box 188, Riverdale, Md. 20737.

■ Help/38 Systems, a division of Advance Circuits, Inc., has announced an updating of its Fastcode shorthand version of IBM's RPG-III programming language for IBM System/38 minicomputers

Fastcode II can be entered in free format using IBM's Source Entry Utility, unlike the fixed-format Fast-code I. After entry, the program is automatically converted into formatted RPG-III source code which can be reviewed or compiled.

Help/38 developed the product after a study of RPG-III programmers showed that in 90% of cases, the same pattern of coding was used to write programs. With the patterns incorporated in the program's structure, one character of Fastcode II typically generates five characters of RPG-III. Fastcode II also replaces more than 65 RPG-III operations.

Fastcode II costs \$1,495 per CPU. Help/38 Systems, 15102 Minnetonka Industrial Road, Minnetonka, Minn. 55345.

Rapitech Systems, Inc. has announced the Fortrix family of Fortran translators for allowing applications programs written in Fortran to move into an AT&T Unix operating environment or to up grade to C language in a non-Unix

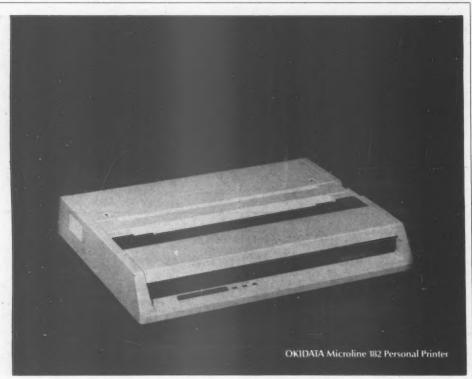
Fortrix-C translates fundamental Fortran code to C code. Input data files remain compatible with the new C program and all internal documentation is retained. Fortrix-C is priced at \$2,750.

Fortrix-C+ includes the ability to handle Common and Equivalence statements as required by C language, and it provides for character and direct I/O handling. Fortrix-C+ is priced at \$4,200.

Fortrix-C' includes Common and Equivalence statements handling and character handling, but it is configured for use on non-Unix systems. The price for Fortrix-C' is \$4,700. Rapitech, 565 Fifth Ave., New

York, N.Y. 10017.

Enzed Systems has announced Univault, a file archiving system for Digital Equipment Corp.'s VAX



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#### IN DEPTH

## Here's what's on your mind

We asked what was on your mind, and you told us.

The end-of-the-year Forecast issue presented seven statements to provoke reader response.

For argument's sake, we said: End users should be kept far from the mainframe data base; micros

threaten the control of DP; Cobol is is kept alive only by vendor and out of date but worth keeping; micro-to-mainframe links are more wish than reality; systems that can't keep out kids playing with computers deserve to be penetrated; senior management treats DP like a back-room service; and Unix

media hype.

Below is a sample of comments. On the inside pages, read more of our readers' responses to each of the seven statements.

> George Harrar Senior Editor, Features

If someone other than DP can do the job, let them! It's not DP that must run the show, but management.

Unix might go places if it was given a simple rewrite so that the commands appeared to make sense.

Cobol equals job security to throngs of mediocre, complacent DP 'profes-

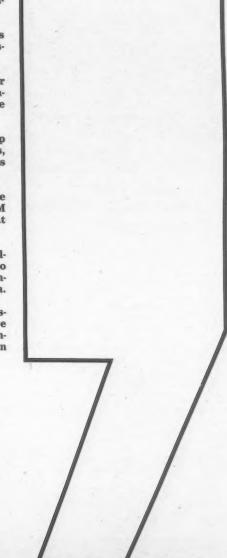
We in DP can only change senior management's attitudes by demonstrating the power of DP in the use of profit-generating activities.

Think about this: If you can't keep kids out, how do you keep Russians, industrial spies and adult criminals

Is Unix alive yet? I thought the world was still using DOS. IBM didn't develop it, so it can't be that

Many large companies are criminally negligent in that they make no sincere effort to safeguard the confidential information they maintain.

If IBM had gone with the Ansi (Ascii) standard in the first place, we wouldn't need all this protocol conversion. We DEC owners have been transferring data since 1981.



#### IN DEPTH/END USERS

#### 1. The farther I keep end users from the mainframe data base, the better.

Wrong! I've recently seen the kinds of behavior changes that good, clean, unbiased information can make, and it's awesome. Our medical staff has significantly altered its utilization of hospital services when presented with its individual practice patterns and peers' experience. It has made for stronger hospitalmedical staff relations and enhanced our ability to succeed in the changing medical reimbursement environment.

Maureen Fera Assistant director, DP Little Company of Mary Hospital Evergreen Park, Ill. Yes, for their sakes. Micro frontends with local storage save the mainframe, give the users a better data base interface and get them all the other goodies a micro can have. (Also known as: Let the crunchers crunch!)
Fairfax, Va.

End users are my reason for being. If I have to keep them away from the data base (which they own and I am just the custodian of), they are incompetent, and it's my job to let management know it.

Margaret Rutledge Mesa Consolidated Water District Costa Mesa, Calif.

DP departments all believe that the computer is *theirs*, and they are really just being nice when they let outsiders (that is, the rest of the company) use it. The closer someone is to the hardware, the more pronounced this tendency (systems programmers are worse than application programmers and so on). The rest of the people in the company recognize this, and a major impetus in acquiring a micro is to bypass the control and authority of the DP department. William Turner III Consultant

Elmira, N.Y.

In the banking industry, the more information end users have to use, the better they can help themselves and their customers. In our case, the end users use all the information we provide them and are constantly trying to come up with new ways of getting more information to do their jobs more efficiently. Except for states where all the customer service

personnel are in one location, which ours is not, getting this information to them is a much bigger problem than letting them have it. Chris Cox

Chris Cox Systems analyst First NH Banks Manchester, N.H.

Translated, this means: Central DP wants to grab power at my expense; now that minis exist, I can tell them to drop dead.
Edward Rawson
Data base designer
U.S. Postal Service
Washington, D.C.

If there weren't any users, there wouldn't be a mainframe data base in the first place. Why run a DP department merely for the convenience of its own personnel?

Jim Stanton
Senior systems analyst
Anoka County
Minneapolis, Minn.

Keeping them away from all of it, yes; from the part they can use — no, no, no!

W.B. Helgeson

Owner

Owner Viking Consulting Services Gig Harbor, Wash.

Yes, because users should have their own local data base that satisfies their operational requirements. Data from the local data bases should be uploaded to the central data base as needed and semitransparent to the local user.

Supervising development engineer Rochester, N.Y.

The more "hands on" they get, the more they want. I think it's great, except I have to support them and that puts a real drain on me.

Kevin Rostenbach
Data processing coordinator
American Institute of Commerce
Bettendorf, Iowa

Some of them, yes! Like the ones who won't read the manual or follow any kind of instructions. The ones who bother to look in the book (few as they are) are great.

as they are) are great. Amy Parker Vice-president, information systems Arthritis Foundation Atlanta, Ga

The end user is the justification for my job and salary. Without the end user, there would be no need for the computer. The more I can interface with the end user and the more he understands, the easier my job becomes.

Michael Hubschman Senior programmer Eastern Airlines Miami, Fla.

Not necessarily. Some of our end users are very sharp and have been successful doing their own thing. On the other hand, some of them are computer morons. We take away their terminals and give them pencils.

D. Lee Dorsey Director of data processing Steuben County, N.Y.

I disagree. Having brought up a new data base system for our circulation department, the ownership of



#### IN DEPTH/END USERS

the data has shifted from DP back to the users. With safeguards and edits of data input, the users have been able to catch and fix their errors, and the data has become far cleaner than it was in the past under their old batch system. The users have discovered new uses of the data and have been able to request many new and better reports.

With proper systems analysis and development, programming has become easier and faster with the data base system, allowing me to spend less time doing maintenance and more time developing new programs. David Dusek

Programmer/analyst Augsburg Publishing House Minneapolis, Minn.

Correct. And if I don't tell my daughters about sex, they won't get pregnant.

Guido De Angelis DP manager Augat, Inc. Mansfield, Mass.

End users, who ultimately own corporate data, should have the responsibility and accountability for reporting the data and providing the means for DP to maintain that data.

The key issue is control. DP, in conjunction with user owners, must establish procedures that determine specific access authorizations. Once these procedures are in place, program maintenance becomes the responsibility of the user, and data maintenance becomes the responsibility of DP.

Users then have the flexibility of ad hoc or standard reporting, and data processing has the available resources for large project develop-

William Rider
DP auditor
Blue Cross/ Blue Shield
Towson, Md.

Trying to keep end users away from the mainframe data base is rather like King Canute commanding the tide not to rise. The challenge is to make central data more accessible to the end user not less so

to the end user, not less so.
Senior data processing professionals and managers are abdicating their responsibilities when they reject end-user computing in its many emergent forms. As our user communities become more familiar with the opportunities for enhanced effectiveness and efficiency that information technology can offer, their clamour for facilities will continue to escalate.

Some swift planning is needed by MIS to identify the common data domains that service the communities of interest within their organizations and to devise practical data regimes that reconcile all the conflicting requirements. Identifying and implementing unifying policies on microcomputers, applications software, fourth-generation languages, parochial data bases, communications and system architectures and security and audit requirements are becoming the new core MIS functions.

Unless MIS can provide the solutions, it and the organizations it services will have to endure the looming problems.

Dennis Bizeray Assistant director, MIS Nova Scotia Power Corp. Halifax, N.S. Canada 77

This statement best describes the typical data processor's paranoic need for absolute authority and control over everything in the organization that relates to information processing. Without the end users and their information requirements, there would be very little reason for the mainframe.

This statement best describes the typical data processor's paranoic need for absolute authority and control over everything in the organization that relates to information processing. Without the end users and their information requirements, there would be very little reason for the mainframe and/or data base —

and even less need for data processing.

Systems analyst Tulsa, Okla.

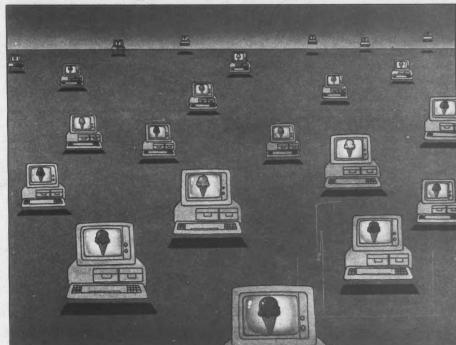
This attitude is archaic, divisive and destructive. When the first computers were introduced into businesses, records were removed from the hands of their rightful owners. This stimulated an opportunity to foster an "It's not my job" attitude. For two decades, management has worked to restore primary influence over data to the end user, where it rightfully belongs.

Adrian Hollander President Complus, Inc. Hickory Hills, Ill.

Balderdash! It is part of my job to educate as many users (especially managers) as humanly possible as to 1) semantics of company data; 2) how information can be obtained; and 3) how information is integrated for an intended business purpose.

Thomas Ardell DP manager John Deere Co. Portland, Ore.

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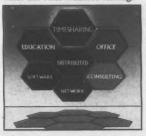
For example, Boeing now provides you service at fixed cost via our Equivalent Machine option, which simulates a minicomputer environment.

And we have a number of dedicated machine options that let you combine Boeing Systems Software and Service Management expertise with your own hardware, allowing you to concentrate on business, not managing your computers. The result: cost-controlled data processing.

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from Boeing illustrate our continuing effort to give you all the integrated information services you need. Including distributed processing and micro/manframe links, office information systems, additional software solutions, education and training, and a variety of professional support services. All designed to let you maintain greatest possible control over your information processing at lowest possible cost.

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1972 Four Phase innoduce VISION software for the 4000 Series of office information systems. A first in the industry, this high-functionality interactive data entry software mables used to added features appropriate to their applications, and to perform data entry and central



1502 Four Phase Systems into Motorols Inc. Now, we are one of the lew companies in the world to provide vertical integration of electronic technology. Together, we offer the most advanced family of microprocessors powering a range of complete office systems.

## Anything less than a complete solution is no solution at all.

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One third of the Fortune 500 relies on office information systems from Motorola/Four-Phase. When these companies need office information systems, they can't settle for partial solutions. They demand it all—hardware, software, service, leadership. All vital elements of the complete system solution. Few suppliers can meet that demand, year after year. Motorola/Four-Phase can.

#### Solution Part One: Hardware

Motorola/Four-Phase has been setting milestones in advanced hardware development for over 15 years.

We pioneered distributed data processing in 1971 when we introduced the first all-LSI computer. Now, with our new 2000 and 6000 Series, we're among the first to incorporate the powerful Motorola MC68010 microprocessor. We provide complete systems—processors, workstations, communications and peripherals.

#### Solution Part Two: Software

We've invested the necessary resources to bring you one of the largest software product lines in the industry—a multitude of tools, languages, and applications programs. Software designed to provide reliable, high-performance solutions, like advanced interactive processing provided by VISION\*; and user-friendly access







and office information systems. We meet your information processing needs today—and tomorrow, with increasingly sophisticated solutions.

provided by our UNIX\*-based UNIVIEW.™ We've designed our software to help you make maximum use of our systems.

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#### Solution Part Four: Leadership

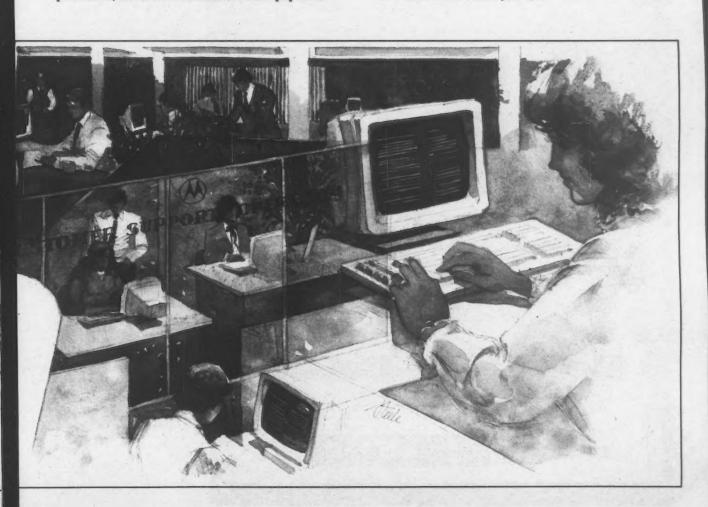
Motorola is a world leader in advanced electronic technology. Businesses of all kinds depend on our long-term commitment to provide innovations in microprocessors, electronic communications equipment

#### Nothing less than a complete systems solution.

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#### 2. The spread of micros threatens the control and authority of the DP department.

Enlightened DPers realize that, with a few well-publicized excep-tions, if DPers are bad systems developers, then end users are worse. One end user planned to train his engineers in Cobol to program in their spare time; another group was going to have its statisticians start using SPF in place of SAS!

**Edward Rawson** Data base designer U.S. Postal Service Washington, D.C.

We stopped micro proliferation before it got started. We have installed AT&T 3B2/300 multiuser 32bit supermicros. Each system has six to eight terminals and three printers. That is cheaper than dumping an IBM Personal Computer on everybody's desk and then trying to network them together as an afterthought. We will link the 3B2 systems together with 3BNet (Ethernet). We will link the AT&T supermicros to our DEC mainframe with Ethernet or RS-232 async. Too much of the trade press is mesmerized by the IBM Personal Computer and its clones.

Computer specialist Federal government Washington, D.C.

The unmonitored, uncoordinated and uncontrolled spread of micros threatens the DP department's very reason for being. If everyone is going to do his own thing, then why have a mainframe and a centralized staff of DP workers at all? On the other hand, if DP takes the lead in micro implementation by providing guid-ance and support to users in their micro-related endeavors, both DP and the users will be better able to contribute to the well-being of the company as a whole. The users can get the computing power they desire, while DP's traditional backlog can be greatly reduced by helping the users to help themselves

Let's face it: Users are much more able to help themselves with computer matters now. In fact, many of our users will go (or have gone) ahead without us! DP should guide the spread of micros, using a heavy hand when necessary, but more often a lighter touch. Then the ultimate goal of all components making a maxi-

mum contribution to the company will be more readily attainable. John Rowland Micro specialist **North American Royalties** Chattanooga, Tenn.

The spread of micros poses no threat to the control and authority of the DP department. In my firm, we service many major New York hospitals. We allow them the use of our computers in a time-sharing situa-

We have also experimented with downloading several of our programs to micros. We have so far been able to utilize Apple Computer, Inc. Apples and IBM Personal Computers, which will enable us to give our clients a choice. They can gain access to our computers by phone lines and use our data bases, buy their own mainframes or buy micros, and we

The bottom line is that each person in the organization is doing the job he knows best, and each machine is devoted to the tasks that it does most efficiently. That absolutely has to show up positive in the company coffers.

will supply the programs. This allows each individual hospital to decide what would be most cost-effective.

Cheryl Schaeffer **Assistant DP manager** Rockville Centre, N.Y.

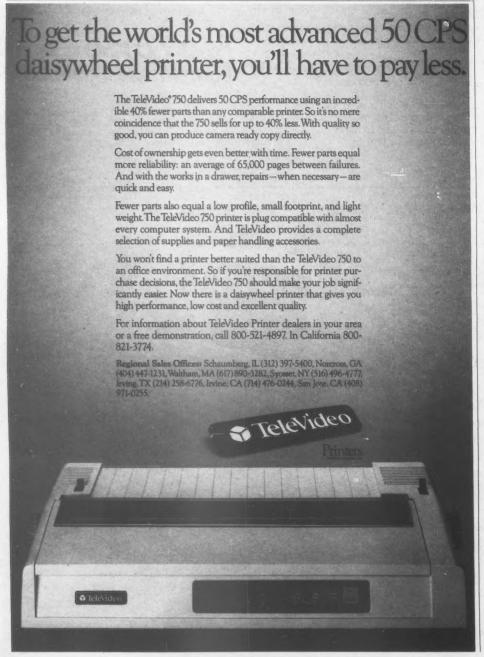
Balderdash! The proliferation of micros is the best thing to have happened to the DP department since the demise of paper tape. If a user is plugging away on a micro he is not:

- Tying up vital machine re-
- Wasting programmer time.Crashing the mainframe. Saturating the print or job
- queue. Screwing up the data base.

But most importantly, he is being productive. There are really neat things that can be done on a micro that eat mainframes alive (word pro-cessing, spreadsheets) and really neat things that have to be done on mainframes because they are too big for micros (corporate budget, pay-

If the whole effort is properly planned, orchestrated and conducted by the DP department, things like departmental budgets, inventories and customer lists can be processed by the user in his own department on micros, and the essential corporate information pertinent to the ledger cost centers, cost allocations, billing - can be downloaded to the corporate data base on the main-

The bottom line is that each person in the organization is doing the job he knows best, and each machine is devoted to the tasks that it does most efficiently. That absolutely has



to show up positive in the company coffers. Emily Johnston President Carroll Computer Consultants, Inc. Westminster. Md.

Certainly DP departments may view it as such, evidenced by policies springing up stating that any future micro purchases must first be approved through them an effort at control and perhaps a masked statement of threat. It is, at the same time, unrealistic and unfair to saddle DP with the support of micros and their application without being included in the justification process. This is an issue to be tackled, not at the department level, regardless of the department, but rather at the corporate/policy level.

Information centers, generally housed and staffed within DP departments, are a good first step in the mas-sive educational effort that must take place in order to achieve a cohesive and productive micro (and mainframe) environment. No one is exempt from this learning process, neither DP nor user areas, and perhaps the most significant knowledge to be acquired is the user vs. DP interaction and what it takes to get both sides talking and accomplishing common goals. Education and a phased, sometimes painful approach is the key to controlling micros and their proliferation. Janet Mushrush

Marketing representative
Com Tech Systems, Inc.
Columbus, Ohio

If so, then it ought to be
threatened. DP department
don't exist as ende in them

threatened. DP departments don't exist as ends in themselves, but to accomplish valid, cost-effective solutions for the people who do real work - getting dollars into the bank account for all salaries and so on. If someone other than DP can do the job, let them! It's not the DP department that must run the show, but management. We should convince management to give us whatever control and authority we need to do what they want, not what we want. DP manager Dallas, Texas

Not so, say I. Properly implemented, micros give an individual complete freedom in his own environment, yet with interfacing allow him controlled access to global company files. This gives the DP department more control over I/O and removes the headache of setting up individual environments.

Tom Newell

Software engineer
Systems Industries

Milpitas, Calif.

No. We find a surprising degree of resistance to micro

use. Those over 30 don't want to learn or, more accurately, teach themselves. Michael Besche President Besche Oil Co. Waldorf, Md.

The spread of micros does not threaten the control and authority of the DP department in the manner that the micro user sometimes views things. The major concern of the professional DP manager is the lack of understanding.

disregard for security and, oftentimes, total disrespect for the disciplines that are inherent in the DP community. This does not imply that all the red tape and standards imposed in a large organization are necessary overhead but that some of that structure is necessary for the long-term survival of the organization.

Unfortunately, too many professional data processing managers do not know enough and care enough 77

We find a surprising degree of resistance to micro use. Those over 30 don't want to learn or, more accurately, teach themselves.

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77

about microcomputing to really deal with it, and too many micro developers view the present DP department as antiquated methods that they will replace. Consequently, the two factions exist, and the organization suffers.

John Glatz Programming manager Firstmark Standard Life Insurance Co. Indianapolis, Ind.

Micros are being used throughout the business office, and so it takes the control and authority and puts it in the hands of people who are not qualified or as qualified as the DP manager. What really gets me is that when a problem arises, then they call on the DP manager. The DP department must have set standards for these stand-alone units, only for the

We are hoping that micros linked to a mainframe will aid in structuring financial reporting procedures to the point of gaining both speed and accuracy.

fact that it's easier to trace one standard problem than to try to trace a wide variety of problems. The control is gone.

Daniel Baran Computer center manager Northwestern Business College Chicago, Ill.

We feel to the contrary. We at Instantwhip Foods are hoping that the spread of microcomputers will help us in our control. At present, we have 40 locations throughout the country who report various financial information to us centrally for compilation and analysis.

Our biggest difficulty is in timeliness and reliability. Either the information is getting to us too late to make an important decision or the information is not accurate enough to make a proper decision. We are hoping that micros linked to a main-

frame will aid in structuring financial reporting procedures to the point of gaining both speed and accuracy.

Christopher Berner DP coordinator Instantwhip Foods, Inc. Columbus, Ohio

I'm not so worried about the authority of the DP department over micros as I am about duplication of effort and control of data. It's hard enough to control data and source code with a development group, let alone a group of nontechnical users. I think local-area networks are going to be the only way to help keep some semblance of control of data/resources with micros. I don't think stand-alone micros have a place in large businesses.

Information systems group manager Buffalo, N.Y.

I don't want authority. I want to supply answers to my users' problems.

If micros can bring this about through packaged software, all the better. (Besides, it'll keep 'em away from my machine!)
Chuck Strain

Chuck Strain Programming manager Claremont, Calif.

The spread of micros helps increase the level of computer literacy of all users. Their expectations of DP departments is increased accordingly.

I welcome this change. Who would want to continue to deal with "dumb" users? There will always be a need for the DP department for various reasons.

Wel-Tih Cheng

Wei-Tih Cheng Manager, IS&CG I/S Planning Systems IBM White Plains, N.Y.

I believe that the use of micros and access to the mainframe data base can provide benefits not only to the end user but to the DP department as well.

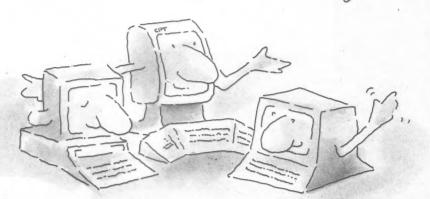
ment as well.

The crucial point to be considered is that adequate control be maintained over who has access to the information and what functions they are allowed to perform. I would be opposed to micro users having update capabilities over the mainframe data base, but I would favor giving access to the data for purposes of analysis, spreadsheets and report writer types of functions. The end user then benefits by having the most current data available, along with the ability to utilize that data in ways which best suit the needs of the user department.

What is overlooked is the fact that DP also stands to benefit. It is true that micros tend to remove some of the control and authority of DP, but I feel these people are really more fearful that by removing some of the mystery associated with DP and lessening dependence on the centralized DP function, their security and prestige is somehow threatened. I believe that providing the use of these capabilities will free DP from much of the mundane maintenance that has historically been required to provide cosmetic changes in report formats.

Let DP control the updates and let the users format their own reports using the data. This will enable DP to emphasize new development, which

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will lead to greater benefits for all involved. Joe D'Aluisio EDP audit manager American Cyanamid Clifton, N.J.

The spread of micros is a golden opportunity for data processing to move into the mainstream of an organization. It is time for DP to rec-ognize that it exists to assist an organization in meeting its operational, tactical and strategic objectives. Micros can be the methodology by which DP can truly contribute to the bottom line.

Marvin Golland Principal Management Consulting Peat, Marwick, Mitchell & New York, N.Y.

The spread of micros creates the need for a cohesive policy in distributed process ing. With an integrated information management policy, the micro-mainframe tie could further elevate both the end users' and systems groups' understanding of the computer industry. The demand from knowledgeable end users will drive software development in the right direction and thus help the computer industry in general. There is definitely no threat from the spread of micros. Actually, it should further help the direction of software development. James Jen Senior consultant General Electric

Superminis can accommodate work groups — micros can't. If one gets away from depending on the obsolete approach of trying to do ev-erything on mainframes, one does not need many micros. Single-user processing is nec-essary whenever a single user would create too much load on a multiuser system. Mainframes have a much greater ratio of storage to processing power than minicomputers; mainframes use the processing power that they have to manage large organizational data bases.

Information Services Co.

Schenectady, N.Y.

Mainframe processing power costs more than supermini processing power and shouldn't be diverted from its primary function. By providing users with their share of supermini power, users can satisfy their requirements without being forced to be administrators for their own micros Micros make reasonable work-at-home terminals and remote processing sites.

John E. Schulte IGP/Environco Wall, N.J.

The DP manager must learn to share the responsibility and authority related to the spread of microcomputers. Instead of being the ultimate decision makers in the mystique-ridden world of data processing, we must learn to function as expert advisers, providing professional guidance on the appli-cation of fast-developing technology to meet corporate requirements.

Micros can be either a for-midable, divisive force driving a wedge between the user community and the data processing department or can function as a catalyst to raise the level of cooperation and effectiveness between these groups. A large part of the blame (or credit) for which path a company fol-lows depends upon the attitudes and actions of the DP manager. Richard Fox

Providence, R.I. Terrific. It is high time

Data center manager

that this control and authority was threatened and questioned. I am a systems analyst in the DP department

and own my own IBM/XT. I am appalled at the opinions of fellow DP employees who feel that the users are not "competent" enough to learn to use micros

Quite frankly, I feel that most DP people are not com-petent, ethical or professional enough to work on the mainframe. Don't the users also deserve the right to learn and make mistakes, as we in DP have?

Systems analyst Tulsa, Okla.

That is like saying the spread of calculators threat-ens the control and authority of the accounting department. Baloney! Who is running the organization, any-

way? Management that allows one of the staff departments to rule its organization deserves the mutiny that will occur.

Adrian Hollander President Complus, Inc. Hickory Hills, Ill.

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#### IN DEPTH/COBOL

#### 3. Cobol is an out-ofdate language, but we're sticking with it.

The beauty of Cobol is that anyone can pick up a program and figure out what's going on. Our investment in Cobol is huge, and for our breadand-butter applications, I'm very happy with it.

Gary Smith Director, MIS Pitney Bowes Credit Corp. Norwalk, Conn.

We don't use it — thank God but I teach it at our local junior college. If people want to be novelists, they should enter a literary profession. Cobol is a language for lowambition people who can't think logically, and structured Cobol is the

#### 77

Cobol may be out of date, but it represents a staggering investment in production software. Surely it will die a slow, natural death.

bible that attempts to turn even those people into coders. Assistant vice-president, systems planning Chicago, Ill.

Cobol is an out-of-date language; however, it is the staple of business computing. It's wordy and was originally structured for some antiquated operating system. It has been abused badly, spinning off of languages like Autocoder and BAL, which have no structuring verbs. In the last decade,

the so-called sloppy coding techniques have been identified and new training developed to rectify some of Cohol's inheritance

Cobol's inheritance.
PL/I, Fortran, Pascal, Basic and so on also have the capability of abuse, but with good training, installation standards and code walk-throughs, we try to eliminate the bastardization of any language.
Robert Boyd
Information resource

Information resource management consultant Simi Valley, Calif. [We are sticking with Cobol] for 10% of our programming efforts. We are finding that 90% of most any application can be implemented with fourth- and fifth-generation tools, with the user implementing much (20% to 30%) of the system for himself.

Benjamin Yarber Director, computer services James Madison University Harrisonburg, Va.

In 1968, Cobol was a revolutionary boon to application development. But, in 1985, Cobol equals job security to throngs of mediocre, complacent DP "professionals." Like the keypunch machine, Cobol served valiantly and now deserves a place of honor in the DP museum.

Henry Meyer
Consultant
Norwalk, Conn.

I didn't think it was out of date. It's the only language on our VAX. We can easily read all of the code, which is a lot more than I can say about the Fortran on our micros. (We also bought Cobol Level II for the micros.)

Amy Parker Vice-president, Information Systems

Arthritis Foundation Atlanta, Ga.

Cobol is not out of date. There are many practical uses for this powerful language. People who keep downgrading it don't understand or don't know the correct way to use it. Many programs today are written in fifthgeneration languages. This is good, but Cobol is still very useful. It will never be completely eliminated. Daniel Boran

Computer center manager Northwestern Business College Chicago, Ill.

[If Cobol is] the most wonderful thing ever to evolve, why are aids like UFOCobol and Cobol XT needed? And why is it that every piece of mail I get with my name on it is my last name first and my first name last? (Strange progress.) Why is assembler (the most powerful tool ever) ignored by management and the programming community? Surely they understand that all meaningful code is written in assembler, including their glorious compilers. Houston, Texas

Our Wang VS 85 runs with approximately 300 Cobol and 50 RPG programs. I still find that Cobol is most easily modified by programmers with less than five years' experience. Also, Cobol programmers are easy to find.

Marvin Weintraub

DP manager Erlanger, Blumgart & Co., Inc. New York, N.Y.

The issue of whether or not Cobol is out of date is not as critical as an evaluation of the needs it serves in the individual company. If a company finds that it is cheaper and more efficient to use Cobol because of its overall familiarity, it should be used. The fact that it may or may not be obsolete does not prohibit its use or lessen its capabilities.

Arnold Gladson
Data management analyst
TCC
Austin, Texas

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WordStar on a PDP-11? Spellbinder on an Eclipse? Friday! on a VAX? PerfectWriter on a PRO? RM/COBOL on a PDP-11? RTCS/UDI on a VAX? Mass-11 on a PDP-11? Milestone on an Eclipse? Lotus 1-2-3 on a Micro VAX? Peachtree on a VAX? SpellStar on a Micro VAX? Mass-11 on a PRO? Datebook II on a VAX? PMS II on a PDP\_11? Final Word MV/10000?

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#### IN DEPTH/COBOL

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Cobol has been the mainstay for most of my last seven years' experience. The previous 13 years, I used numerous other languages but could never realize the productivity, maintainability and readability of Cobol. It's easy to convert, transport and interchange with other developers and projects.

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Cobol may be out of date, but it represents a staggering investment in production software. Surely it will die a slow, natural death. As we get better productivity tools for software development, abandonment of good Cobol coding technicians and techniques would be foolish. The installed base of production software will be viable, both functionally and economically, for a long time to come. Also, much of the existing Cobol software could poten-

tially be retrofitted at a significant cost advantage over developing from scratch.

developing from scratch.
Ultimately, the fourthgeneration languages with
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Inc.'s Ideal.
Guido De Angelis
DP manager
Augat, Inc.
Mansfield, Mass.

Cobol is not out of date! It is the language of choice for most of the independent software programmers I run into. It has been very nicely augmented on many machines, such as the DEC VAX. It keeps showing up in new places, such as a recent announcement about a Cobol for IBM Personal Computers.

[This statement] should have said, "Cobol is not out of date, therefore, we would be fools not to stick with it." Cobol has been the mainstay for most of my last seven years' experience. The previous 13 years, I used numerous other languages but could never realize the productivity, maintainability and readability of Cobol. It's easy to convert, transport and interchange with other developers and projects. Richard Bator
Software consultant
Bator Associates
North Andover, Mass.

Different languages were designed to emphasize different features, and as long as they are used to serve those purposes that they serve best, they perform satisfactorily. The addition of bells and whistles only dilutes their efficiency. Tinkering, rather than time, is their enemy. This is not to say that we do not need new languages and approaches — we do — only that we would probably be better off to leave the "old" ones alone and conceive new ones. Brian Le Bert-Francis Falls Church, Va.

... not to mention verbose and clumsy. A lot of DP management types seem to think their programmers are so dumb that they could never learn anything else.

Jim Stanton
Senior systems analyst
Anoka County
Minneapolis, Minn.

Cobol serves its purpose. It is not elegant, and my only work with Cobol was to specify and compile for it. It was never intended for systems work and should not be judged for that. Cobol, to the credit of its supporters, has evolved and is useful for day-to-day applications. Joseph Petrosky Computer consultant Bolton, Mass.

The problem we experienced on the IBM System/36 is that RPG is an out-of-date language. We recently obtained Cobol; compared with RPG, it's state of the art. Chuck Lundgren Programmer Caribou Mountaineering Chico, Calif.



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#### IN DEPTH/COBOL

True, our installed software base is too large to convert to something else. Either we need automated converters (a dream) or a means to combine modern language products with old Cobol programs.

Carl Vigit Associate director, production services San Jose State University San Jose, Calif.

Cobol, PL/I, assembler, Basic who cares? It all gets loaded into the computer in machine code anyway. The faster it can be coded and tested, the better.

Michael Hubschman Senior programmer Eastern Airlines Miami, Fla.

(if we ever get it) incorporates most of the advances in programming of the past 20 years and will be one of the best procedure-oriented languages around. What we need now is for a few publicity seekers to butt out of the standards-making process.

**Bob Brown** Manager, systems and programming DeKalb General Hospital Decatur, Ga.

Cobol has been bad-mouthed since the early '70s. I'm not ready to give

There is no other language that is as machine-independent and univer-

Dale K. Kodama **Executive vice-president** On-Line, Inc. Bellevue, Wash.

Cobol-60 is out of date. Cobol-81

Cobol will eventually wear out under the weight of its maintenance requirements and backlog. Fourth-generation languages are too fast and will take over more and more. Structured languages that turn computers into near life forms will really move things along.

It still has many uses. Soon, fourth-generation languages for programmers (with emphasis on structured design) will provide excellent performance in heavy-duty, on-line transaction processing systems. There is too much code out there to be maintained to drop Cobol completely.

Product planning and integration Princeton, N.J.

Yes, unfortunately. It will eventually wear out under the weight of its maintenance requirements and back-

log.
This decline will take a while, however (on an industrywide scale). Fourth-generation languages are too fast and will take over more and more. Structured languages that turn computers into near life forms will really move things along.

First: A standardized generalized download needs to be developed with interfaces to the data base at the mainframe (with a way to acces more than one type of data base) and accessibility programs that will load

a standard file into a particular application as desired at the personal computer.

Carlton G. Lamb Owner

Customware Atlanta Atlanta, Ga.

Yes, theoretically, but as long as programmers and managers continue to think in Cobol logic when solving problems, Cobol will never be out of date. However, the advent of expert systems will change this situation. Christopher Carosa

Manager of corporate information system Manning & Napier Advisors, Inc. Rochester, N.Y.

For an out-of-date language, Cobol seems to be thriving. It's too en trenched to disappear like Silas Marner in high-school literature classes. Personally, we hardly use it, preferring retrieval and query languages.

Margaret Rutledge Mesa Consolidated Water District Costa Mesa, Calif.

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#### IN DEPTH/MICRO-TO-MAINFRAME LINKS

#### 4. Vendors keep announcing micro-tomainframe links, but I haven't found one available right now that works for my company.

Yes, but the problems are in data reduction, not file transfer. Micros are not yet powerful enough to pro-cess really big data bases, so data reduction has to be done on the mainframe. This task has not been successfully generalized yet.

Bob Brown Manager, systems and programming **DeKalb General Hospital** Decatur, Ga.

With 75,000 IBM System/34s, System/36s and System/38s sold, you would think that Lotus Development Corp. or Microsoft Corp. would develop a decent link between them and personal computers . . . (sigh) No accounting for market savvy.

**Chuck Lundgren** Programmer **Caribou Mountaineering** Chico, Calif.

That's funny. Our micros already talk to our VAX and have for years. Matter of fact, our oldest (1979) micros have bisync communications. Amy E. Parker

Vice-president, information systems **Arthritis Foundation** Atlanta, Ga.

If IBM had gone with the Ansi (Ascii) standard in the first place, we wouldn't need all this protocol conversion. We DEC owners have been transferring data since 1981. Chuck Strain

Programming manager Claremont, Calif.

Whoever [made this statement] wants a complete solution from a general application. Links are hard-ware connections between computers. The software, other than drivers, is a very specialized thing that must be designed and custom fit to each implementation.

**Tom Newell** Software engineer **Systems Industries** Milpitas, Calif.

Vendors will continue to announce products before they really work as long as it continues to take several months from first contact to sell the product. I would not worry about links until the intended users demonstrate the skill to use stand-alone micros. When we are ready, we will define a performance condition and demand a guarantee from the vendor as a condition of full payment. Adrian Hollander

President Complus. Inc. Hickory Hills, Ill.

Keep looking. What are your company's needs? There may be nothing out there to satisfy the linkage between a large number of points/environments. You don't have to buy

With 75,000 IBM System/34s, System/36s and System/38s sold, you would think that Lotus Development Corp. or Microsoft Corp. would develop a decent link between them and personal computers . . . (sigh) . . . No accounting for market savvy, I guess.

anything.

Don't blame the vendors. If there were a market of any size for what you need or if it were technologically possible, it would exist.

Manager, Product planning and integration Princeton, N.J.

I just bought a package that links IBM Personal Computers or compati-bles to an HP 3000. It works! Programmer/analyst Rolling Meadows, Ill.

We are going to try this on a very small scale, but it will be a first for us. I'm willing to predict only a 30% chance of making the connection without any serious time delay prob-

Sam Ashenberner Director of data processing Pacific University Forest Grove, Ore

And I don't think I ever will. Vendor announcements belong in Rip-ley's Believe It or Not as far as I'm

D. Lee Dorsey Director of data processing Steuben County Bath, N.Y.

Maybe there is one - we have it on order for our Decsystem-10/IBM Personal Computer environment. I've seen it demonstrated; I have to get my hands on it to know if it really does work. Within two months I'll know. (I've always been an optimist!)

E.R. Jackson Manager, **Technical Computer Services Griffith Laboratories** Toronto, Canada

There are so many types of links available: dumb terminal emulation, simple file transfer, application-intelligent file transfer and others. I think it is important to evaluate what is to be accomplished with a link prior to researching products available on the market. Application vendors (such as Management Science America, Inc.) are hitting the closest on intelligent links, because

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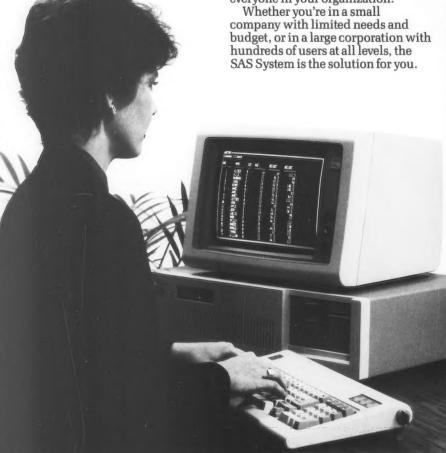
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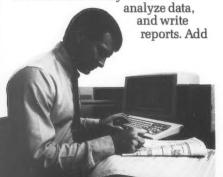
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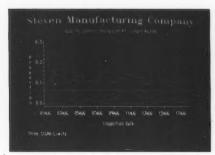
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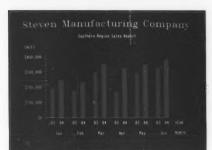
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Bob Gildenberg, Vice President, Marketing, Philon, Inc., NY, NY

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**COMPUTERWORLD** 

#### IN DEPTH/MICRO-TO-MAINFRAME LINKS

77

Either you haven't looked in the right place or your requirements aren't realistic or you don't need a link or you're a perfectionist. In this last case, you'll just have to do it yourself or wait a while (along with me).

they integrate micros with a specific application. If any link does not support the application goals of the user, it is not accomplishing its pur-

Systems analyst Tulsa, Okla.

There is no easy or generic answer to the micro-to-mainframe problem. Each microto-mainframe application will require considerable custom programming in order to handle the different

types of data formats involved.

Users can stop waiting for a micro-to-mainframe cureall and should start developing these connections with existing products. Chris A. Kantack Systems analyst/ programmer Todd Building Co.

I have not found an application on the Personal Computer that can justify the

Roseburg, Ore.

cost of creating a micro-tomainframe link.

The link is good in theory, but there is no real need identified yet.

We are using Personal Computers to emulate the IBM 3276 in remote locations and then switch back to Personal Computer mode for local use

Gary Dyer MIS director Blue Cros Boise, Idaho

Either you haven't looked in the right place or your requirements aren't realistic or you don't need a link or you're a perfectionist. In this last case, you'll just have to do it yourself or wait a while (along with me). J. Grabowski Corporate DP consultant Sandoz Pharmaceuticals Basle, Switzerland

Polygon Associates' TRM works beautifully between Digital Equipment Corp. micros and PDP minis.

We used it solidly for a year to print things from a DEC VT180 because I refused to invest any money in a printer for these obsolete machines

Margaret Rutledge Mesa Consolidated Water District Costa Mesa, Calif.

The true micro-to-mainframe links are all "vapor-

In my opinion, they are all quick fixes. Our company is doing just fine without a micro-to-mainframe link.

Programmer Natick, Mass.

Both buyers and sellers of micro-to-mainframe links need to ask themselves what purpose they are attempting to serve in each case

To require or establish linkage for its own sake seems pointless.

Given a clearly stated need, however, there is usually a satisfactory solution. Brian Le Bert-Francis Falls Church, Va.

Look not to the vendor, nor even to the hardware. Look, rather, to the data highway that de facto exists between the host and the remote terminals. The link is already there. Vice-president Tampa, Fla.

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#### IN DEPTH/HACKERS

#### 5. Hackers are just kids playing with computers. Any system that can't keep them out deserves to be infiltrated.

Fortunately, we have a closed system, but security has always been designed into it. If we can't hurt it on purpose, no hacker can either. Filters that limit the entries to the system are easy to write and should be used.

Michael Hubschman Senior programmer Eastern Airlines Miami, Fla.

False. Hackers are not just kids, and given time, they can break into almost any system. It is my job to make it difficult for them, to try to ensure that what they find is worthless and to be able to recover from their activities. Carl M. Vigil

their activities.
Carl M. Vigil
Associate director,
Production services
San Jose State University
San Jose, Calif.

This is largely true. Although the popular press describes "break-ins," this actually seems to be simple theft of passwords.

I believe that many large companies are criminally negligent in that they make no sincere effort to safeguard the confidential information they maintain. My experience is that most DP installations do little to make their systems secure; rather, they hope that making an example out of the occasional person who knows so little that he gets caught will scare off other violators.
William R. Turner III
Consultant
Elmira, N.Y.

This statement bothers me because it tacks a negative label on all hackers regardless of how they behave. It also tends to trivialize the matter of system security. In the first instance, a distinction should be drawn between legitimate inquiry by nonconforming individuals and unethical actions on the part of a few delinquents (not all juvenile).

There are good hackers and bad ones. In the second instance, security is a trade-off between user needs and the cost effectiveness of responsive controls. The potential for intrusion is determined by the attractiveness of the bait for all would-be intruders and the difficulty of penetrating the

shields. Unfortunately, hard puzzles attract inquisitive minds. Brian Le Bert-Francis Falls Church. Va.

I think it's going to take a hacker breaking into a computer system to make people expend the money to protect a system from illegal access. A secure system requires a strong, intelligent person to push a company to protect its system. Currently, our company is paying token respect to security; but it has a long way to go. How does one secure 100 micros? Systems manager Buffalo, N.Y.



Currently, our company is paying token respect to security, but it has a long way to go. How does one secure 100 micros?

Hackers used to be users trying to find out more about their own or others' systems. Before users, systems people used to be hackers. The problem isn't a new one, just more widespread than it used to be.

Passing laws against computer crime is not preventive and is worth little as a deterrent. If data is misused by an unauthorized user, the system's designers are at fault for designing and installing an unprotected system.

Data is to a corporation what cash is to a bank. A bank wouldn't like to leave millions in cash out in an unprotected environment where people could grab whatever they wanted, but little is done to protect data.

Software and hardware vendors should be faulted for allowing this unprotected environment to be marketed as it has been over the years. DP auditor
Florida

Hackers are not necessarily kids. A new name [should be found] for honest hackers, but terrorists may be a good name for destructive hackers. I totally agree that "any system that can't keep hackers out deserves to be infiltrated." The [security] problem has been ignored too long. W.B. Helgeson Viking Consulting Services Gig Harbor, Wash.

Hackers who "trespass" know they are trespassing. Some may navively think they are only breaking a small law (like telling only a little white lie), but the damage some have done is real. Any house without locks "deserves" to be broken into? Not really, but with increasing crime, a wise manager is prepared. DP manager Dallas, Texas

Hackers probably just aren't kids, but any system that lets hackers in deserves it! Thomas Ardell DP Manager John Deere Co. Portland, Ore.

As happens too often, the



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#### IN DEPTH/HACKERS

knowledgeable people follow the idiot press in degrading a good word. Hackers are not necessarily kids (the best ones aren't) and are not computer infiltrators as such. A hacker is a person of any age who "plays with computers" in a knowledgeable, technical way - someone who loves the complexities of sys tems for their own sake. The use of "hacker" as a term for computer bandits stems, I suspect, from fear of anyone who doesn't go by the book and who has fun with what he's doing

Gary McGath Software consultant Hollis, N.H.

99

Muggers are just kids playing with knives. Anyone who can't defend himself deserves to be robbed.

Well, the system doesn't "deserve" to be infiltrated any more than an unlocked house "deserves" to be burglarized. But most hackers are inept at computing and related disciplines. Deterrence via example is a good preventive, along with oth-

Richard Conner Lawyer San Francisco, Calif.

A teenager steals/vandalizes products in a stereo store. Do we blame the store owner? No. Let's try to find more effective ways of enforcing this crime. **Christopher Seker** Programmer/analyst Richard S. Carson & Associates Bethesda, Md.

Think about this: If you can't keep kids out, how do you keep Russians, industrial spies and adult criminals

William L. Smith President Silent Partner Systems Clearwater, Fla.

If you have your car un-locked, does it deserve to be stolen? It boils down to a sense of values — right vs. wrong. Anyone who can't determine that it's wrong to steal computer resources or damage others' data probably thinks shoplifting would be acceptable - if it were as easy as hacking. But just as a shop owner can't leave the door unlocked. DP managers can't leave their machines unlocked either. Information systems

Muggers are just kids

manager Chicago, III. playing with knives. Anyone who can't defend himself deserves to be robbed. Roger M. Firestone Blue Bell, Pa.

Computer security should not be that hard to set up. Cut the phone line if you have to. Don Davis Software consultant Houston, Texas

Our system and local-area

that they are becoming vital to the company. Yet security and administration have not caught up to recent growth. Financial systems manager Minneapolis, Minn.

Prognosticators keep saying that we will soon have personal banking on home and personal computers. Looks to me that it would be a hacker's paradise. How could you possibly devise a security system that would be "hacker-proof" but

allow home computers easy access to your banking ac-

I have never seen this subject addressed in any article or publication. Can it be done? I doubt it! M.D. Emel Senior systems analyst Omark, Inc. Portland, Ore.

Too much is made about these attempts when there are several really simple so and password control/ID control a la ACF2. **Donald Weimer** Senior systems programmer Grumman Data Systems Bethpage, N.Y.

Hackers are crooks and should be tried as such. I keep our modems disconnected - they get hooked up only when necessary. Margaret Rutledge Mesa Consolidated **Water District** 



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#### IN DEPTH/MANAGEMENT IN DP

#### 6. Senior management still treats DP as a back-room service.

Not so. We've been delegated the responsibility to teach computer literacy courses to all staff, from presidents to groundsmen, not just micro, but mainframe.

Benjamin Yarber Director, computer services James Madison University Harrisonburg, Va.

Monterey, Calif.

Well, isn't that what it is? It's a tool. Just because accounting and law have become two tails that wag the dog, does anybody need a third? Lewis Gulick Senior scientific programmer/analyst

#### 77

There is still a feeling that all use of technology must generate cost savings. We in DP can only change senior management's attitudes by demonstrating (prototyping) the power of DP in the use of profit-generating activities, for example, marketing.

If you want Ralph Nader to forget the 55 mph speed limit, give him a Volvo or Thunderbird turbo.

Get the "head-shed" involved. Walk them through the shop, let them see all those lights flashing on the master console, the tape drives spinning — better yet, their paychecks being printed. Take them on a few days' seminar; tell them what

your organization does for the company and what your long-range plans are. Give them personal computers for their home or office and some training (no technical talk or buzzwords).

Robert Boyd Jr. Information resource management consultant Simi Valley, Calif. In many situations where this problem exists, the "bottom-rung" image can be altered through diplomatically and gradually educating senior management. In other situations, the senior managers will always look upon DP personnel as mere button pushers and reward them commensurately. My opinion as to the reasons for this type of attitude would consume much more space than available here.

Tom Young

Tom Young
Assistant controller
Salt Lake County
Water Conservancy District
Salt Lake City, Utah

There is still a feeling that all use of technology must generate cost savings. This attitude is supported the most by accountants and financial types. It's not surprising — it's their job. We in DP can only change senior management's attitudes by demonstrating (prototyping) the power of DP in the use of profitgenerating activities, for example, marketing.

Jess Ray Vice-president, business systems Associates Bancorp, Inc. Chicago, Ill.

Organizational charts generally show DP reporting through administrative services or financial services: the service organization. Its purest function is to address an organization's informational needs, be that reporting on past performance or forecasting future activity. More companies, although not making public statements in this vein, are viewing good information as the life blood of a well-run organization, not merely servicing. Certainly, if budget ratios (the percentage of the DP budget to the total picture) and salaries in the marketplace (entry-level positions are higher than they've ever been) are indications, the "back room" is not an appropriate adjective.

If DP is treated as a back-room service by senior management, it could very well reflect the accuracy and timeliness of data it produces, which could also relate to the spread of micros. In order to turn this situation around, DP must first determine and justify the tools it needs to be responsive and, once acquired, put them to use quickly and efficiently. To ensure success in this endeavor, the planning and justification needs to be a joint venture between senior management and DP with appropriate accountabilities communicated up front.

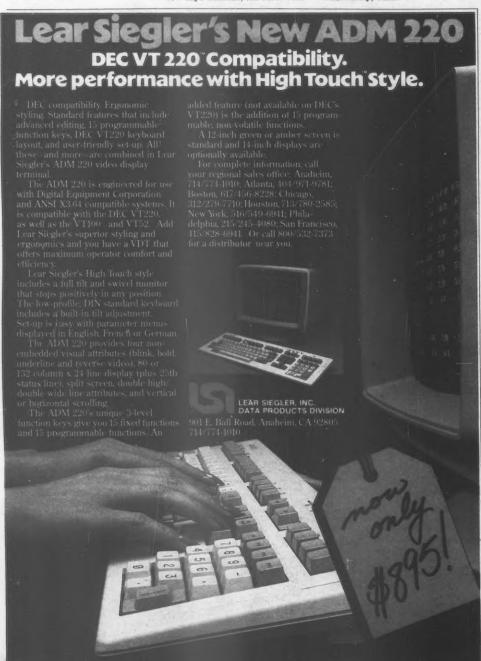
Janet Mushrush Marketing representative Com Tech Systems, Inc. Columbus, Ohio

Only sales, probably because they're not in often enough to realize that I haven't shaved because I haven't been home.

The other departments are very nice. They say, "Why don't you grab a cup of coffee and sit in my chair awhile?"

Michael De Tomaso DP manager Watercloud Bed Co., Inc. Santa Ana, Calif.

This attitude is being overcome by those MIS managers who learn to address the business issues and strive to demonstrate MIS value in terms of net worth, profit



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#### IN DEPTH/MANAGEMENT IN DP

orientation and a key contribution to business improvement. Robert Trapp Director of MIS Bi-state Development Agency St. Louis, Mo.

I have 12 years of solid DP experience. If I were the vice-president of finance and marketing, would the president and board of directors wonder why they were going broke? Does any industry outside the DP industry employ a vice-president of information services? If companies fail to take a bite out of this reality sandwich, someone else will do it for them. I hope it's not the competitors. Manager, Technical programming Calgary, Alta., Canada

Yup — fer shur! At best we are a necessary evil, and I suspect they

**77** 

When DP can't design and support the newest system to beat out the competition, some highlevel executive (with demonstrated moneymaking skills) is brought in to run DP. After all, being an executive means you can manage anything, despite ignorance about the subject.

debate the degree of necessity from time to time. E.R. Jackson Manager Technical Computer Services Griffith Laboratories Toronto, Canada

Despite the growing use of third and fourth-generation hardware and

software, the major problem in data processing today is (and always has been) poor managers and technical personnel. Many Wall Street firms continue to treat DP as a simple, back-office tool. When DP can't design and support the newest system to beat out the competition, some high-level executive (with demonstrated money-making skills) is

brought in to run DP. After all, being an executive means you can manage anything, despite ignorance about the subject.

This leads to the next round of personnel movement. The qualified people leave because of frustration with the latest corporate know-it-all and the remaining yes-men and women prepare for their next move up the corporate ladder based solely on the ability to be inconspicuous.

Project manager
New York, N.Y.

This situation certainly depends on the type of company involved. Ours is a successful, conservative Midwest distribution company that has used DP as a tool to help get us where we are today.

To our company, DP is a service department to manage the high volume of information required in our business. As long as that job is being done, it would be out of character for our company to look to us to do any more. I believe that there is a lot more we could be doing, and someday we will. It's difficult to argue with senior management's success. Michael Wagner Director of data processing Nasco

Tot Atkinson, Wis.

DP is a tool. It is a back-room service. DP is necessary and important but is not the company itself. Roger Boese Consultant Insurance systems Tokyo, Japan

Yes! Yes! We see this particularly in the engineering field, where archaic manual methods of testing and data recording are so entrenched. Automation of data collection is commonly regarded as a frill.

Ann McCormick

Manager, Test data handling

Comsat General Corp.

Washington, D.C.

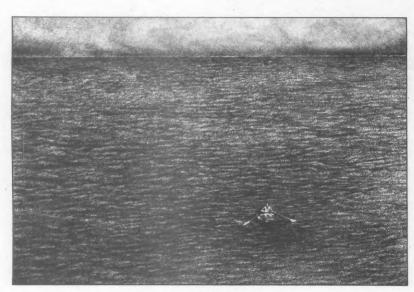
Quite often the case, but whose fault is that? DP has experienced rampant growth in the last four decades. Many managers have been promoted with little regard for their lack of qualifications for management. At the same time, senior management outside DP has not kept itself informed as to how DP should

What is the answer? Get an education program for both sides. Improve ability to communicate. Make the DP manager accountable for every dollar spent. Both the DP manager and those to whom he is accountable should be able to answer questions like the ones in this survey. Credibility has to be earned.

Eric Wieler
North American Representative
Softlab GmbH
Tampa. Fla.

I think this will always be true. Senior management is the head of the user groups and is never satisfied with the schedules or budgets of its DP shops. It seems to be a matter of lack of understanding. How does DP explain to a user that the investment of time and money usually results in quality, and very quick turnaround of projects usually results in high maintenance costs?

Buffalo, N.Y.



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**WINDOWS** 

#### IN DEPTH/UNIX

#### 7. Unix is an operating system kept alive only by vendor and media hype.

Nope. The value of Unix is in its portability. Now that Unix has proven it can be done, we need a good portable operating system. **Bob Brown** Manager, systems and programming De Kalb General Hospital Decatur, Ga.

Many of our users want to try it, but I've never seen it work in an administrative office. Carl Vigit Associate director. Production services San Jose State University San Jose, Calif.

Is Unix alive yet? I thought the world was still using DOS. IBM didn't develop it, so it can't be that good. Chuck Strain Programming manager Claremont, Calif.

Unix might go some place if it was given a simple rewrite so that the commands appeared to make sense (that is, use mnemonics).
William Turner III Consultant Elmira, N.Y.

Software and hardware vendors should be faulted for allowing this unprotected environment to be marketed as it has been over the years. DP audit consultant Longwood, Fla.

In my world of multimegabyte mainframes, Unix is theory only. Michael Hubschman Senior programmer **Eastern Airlines** Miami, Fla.

Unix has its place in universities, in program/system development. Its popularity is causing use in areas where it is not the best choice. I think use will either decline, or Unix will be modified to fit these other environments. But the hype is not just because of familiarity, it's also because of usefulness and power. **Tom Newell** Software engineer System Industries, Inc.

Not true. Unix is becoming available on single-user micros, multiuser micros, minis and mainframes. There is a lot of good software for Unix, such as Unify DBMS, Quadraton of-fice automation and Access Technology, Inc.'s 20/20 electronic spread-

Computer specialist Federal government Washington, D.C.

Milpitas, Calif.

Right on! Unix is this year's Cabbage Patch doll of operating systems. **Chuck Lundgren** Programmer Caribou Mountaineering, Inc. Chico, Calif.

Unix is an operating system I would like to understand, but every article I read is written in "Unix-Greek," and I can't begin to decipher what it is. If someone knew what a

shell or kernel did, they could decide if they needed one. DP manager Dallas, Texas

Wrong. Unix serves as one of the very few available options for portability and protection of software investment.

W.B. Helgeson Owner **Viking Consulting Services** Gig Harbor, Wash.

As a software developer, definitely not. Unix is beyond state of the

If there is any problem with the acceptance of Unix, it's because no one knows (or few) know of its technical prowess. (This may be blind adulation, but I don't think so.)

Unix results in a tremendous

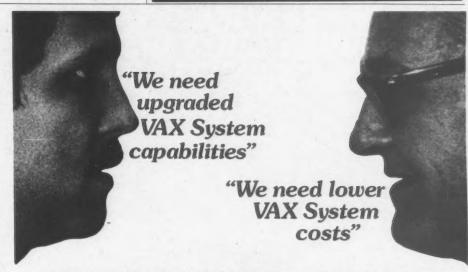


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#### IN DEPTH/UNIX

77

The world needs more visually oriented systems (a la Apple Computer's Macintosh) for the good of its users than more Unix, which only serves the pleasure of its wizards.

release of hardware usage and greater software capability. "C" is rampant in the development world right now and will be the most effective utilizer of Unix. Carlton Lamb Owner Customware Atlanta Atlanta, Ga.

Unix is kept alive by people who graduate knowing it and have the natural desire to use it rather than having to learn a different system for doing the same thing. It will, of course, have to be replaced soon to support a new round of theses.

Lewis Gulick
Senior scientific programmer/analyst
CTB/McGraw-Hill
Monterey, Calif.

No. The specter of Unix scares many people. Unix seems to gain more acceptance every day. One of the keys is the number of programmers and nonprogrammers who are familiar with Unix from college. Michael Isaacs Systems manager IMR Systems Corp. Leavenworth, Kan.

A solution for which there is no known problem!

James Shannahan

DP auditor
San Jose, Calif.

While my Unix experience is only hearsay and thus not highly reliable, my considered opinion is that Unix is a dead-end operating system at best, and the hubbub over its eventual accession will earn authors more income than the sale of Unix operating systems will ever earn AT&T. The world needs more visually oriented systems (a la Apple Computer's Macintosh) for the good of its users than more Unix, which only serves the plea-sure of its wizards. **Thomas Osgood** Director of computing services **Indiana University East** Richmond, Ind.

The appeal of Unix seems to be its capacity to run multiuser applications. Unix demands a much more powerful computer than those typically found in the \$5,000 to \$10,000 category today, but I expect to see several inexpensive computers that can support Unix in the next computer-model year. Adrian Hollander President Complus, Inc. Hickory Hills, Ill.

With AT&T and Bell Labs behind it, Unix has spread enough to be a near-standard language. Although vendor and media treatment surely has provided tremendous exposure, the proof is in the pudding — the number of years. Whether it becomes a true standard will depend on the same factors that made IBM and its products standards: sufficient, sustained market share, including support, improvement and a satisfied customer base.

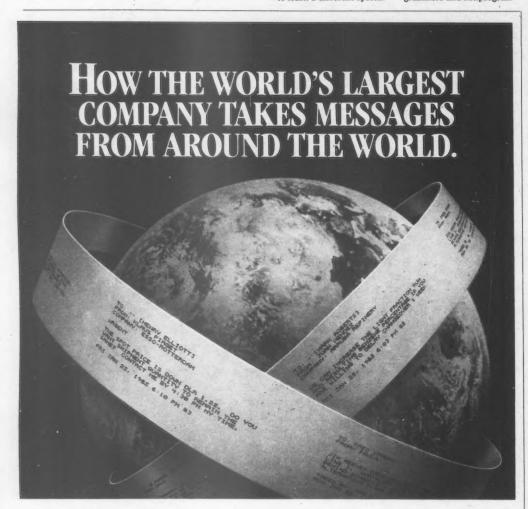
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#### IN DEPTH

# Can IVIS lead the push for PRODUCTIVITY?

By Dave and Pat Ackley

More than 90% of U.S. companies today have some type of productivity improvement effort under way. Often, a productivity improvement department coordinates performance improvements and tracks results in each organizational unit throughout the company. The goal is to improve efficiency in both blue- and white-collar areas of the business.

Such widespread efforts converge on the MIS user community, which is being served by the development of data and information systems. In fact, a major objective of these MIS projects is to improve user efficiency through the availability of more complete and accessible company data.

Most large companies have begun to apply quality-of-work-life programs, such as quality circles, team building and sociotechnical systems design. The objective of these programs is to improve user efficiency. Although the methods are totally different, these are also the objectives of the MIS organization in providing better data and information services.

To complicate the situation further, industrial engineering takes an active role in many U.S. companies. It is no longer just a tool for improving efficiency on the factory floor. We now see industrial engineers performing

MIS is only one part of the corporation trying to coax productivity gains from end users. The uncoordinated overlap of effort confuses the object of all this attention and breeds inefficiency. The need for an integrated approach is becoming apparent. But which department should lead?

work-flow analysis and applying work simplification techniques in white-collar and office areas of the business. And one of the key tools in an industrial engineer's analysis kit is the application of computer technology to the work being examined.

This uncoordinated overlap of services, with their differences in approach to addressing user needs, is beginning to confuse the user and is leading to suboptimization and inefficiency. Soon the need for an integrated approach will become apparent, raising obvious questions about priority and jurisdiction.

#### **Need for coordination**

To illustrate the need for coordination of user services, the following composite scenario was assembled from company experiences. It depicts a week in the life of a typical purchasing department sometime in the not-too-distant future:

Monday morning: The purchasing department buyers hold their weekly quality circle meeting, where they continue analyzing ways to improve their efficiency in evaluating vendors and implementing purchase requests.

Monday afternoon: An industrial engineer begins his series of interviews with purchasing department supervisors to prepare a workflow analysis of the procurement cycle.

Tuesday (all day): MIS systems analysts meet with representatives of the purchasing and materials management departments to review specifications for the new material control system development project.

Wednesday morning: The purchasing manager attends a workshop off-site with the other administrative services managers. The workshop is led by a consultant who trains them in techniques for mission clarification and objective setting. The intent is for each manager to then apply the techniques to improve his own department's effectiveness.

Wednesday afternoon: Inputs are due from the purchasing manager and supervisors on their monthly performance measures. This is part of a companywide program to develop a productivity measurement system.

Thursday: The office services analyst meets with various members of the purchasing department clerical staff to discuss their paperwork requirements and investigate ways of introducing a local network of intelligent workstations.

Friday morning: The purchasing manager attends the monthly administrative services planning meeting, where the morning is spent

brainstorming ways to support a major increase in work that will result from several new company contracts.

Top management has decreed that the additional work will be accomplished within the existing head count, so the managers are looking for ways to increase throughput and efficiency.

Each of the above activities relates to improvement in the way users perform their work. Taken individually, each represents a worthwhile endeavor. But taken collectively, from the using organization's point of view, are all of these individual activities necessary? Which approach should take priority? Which ones are redundant, and which are complementary? To what extent should they be synchronized?

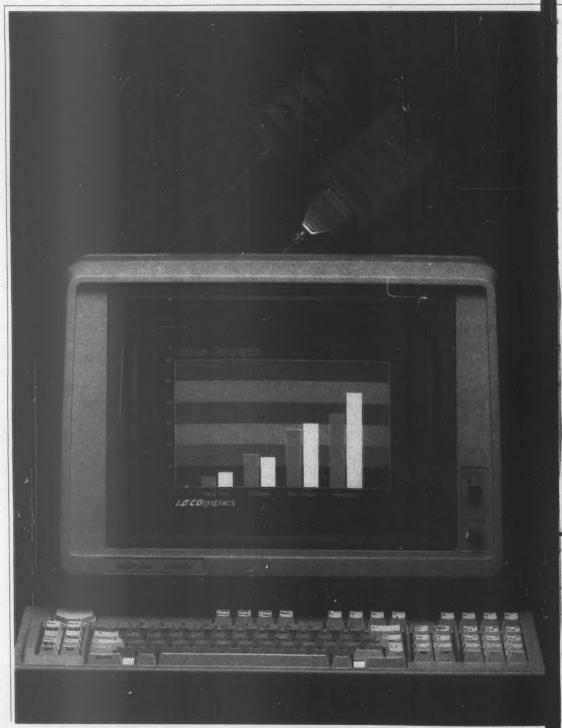
To address these questions, a common frame of reference or conceptual theme is needed that can be applied over the entire range of user assistance efforts. To develop a unifying

To develop a unifying theme that can be applied to sort out the various user assistance efforts, it is necessary to identify what they have in common. In each case, the primary goal is to improve productivity by applying computer technology to provide the worker with better access to required data and information. That goal may involve automating some aspect of the work, re-

organizing and redefining the work structure or measuring the worker's results and providing feedback on performance.

Productivity improvement is the common theme that can bring out the similarities and relationships among the multiple programs and services that address workers' needs.

Most U.S. companies began their productivity improvement efforts outside of the MIS department, starting



with fragmented programs such as performance mea surement, statistical quality control, work simplification, quality circles and others. Later, as practical experience was gained, the need for coordination of such individual activities became obvious

#### Coordinated approach

Today, many large companies are moving toward integration of the fragments into a coordinated productivity

approach. In many cases, integration has led to establishing the new position of corporate productivity direc-tor, whose goal is to pull to-gether the disjointed productivity-related activities

So far, however, most of these coordination efforts have excluded the MIS func-tion. A critical element still missing from productivity management is an awareness of the extent to which MIS data and systems development projects are also productivity improvement ef-

Part of this lack of awareess of the MIS productivity improvement role is because of the narrow way productivity is currently defined.

The following definition is well-accepted by most practitioners of productivity improvement programs but has yet to be applied to MIS systems development projects: Productivity = output/ input = results achieved/resources used.

Currently, MIS people typically relate the idea of productivity improvement to software tools aimed at increasing MIS internal effi-- for example, by ciency producing more code with fewer programmers or by employing higher level languages that require fewer statements.

However, the same definition of productivity applies equally well to MIS external efforts. After all, the purpose of organizing company

data into data bases or developing information systems is to enable users to perform their jobs more productively by providing better access to more accurate and complete

In many cases, the use of computer aids allows the user's work to be streamlined and even automated, but the end goal of MIS services is still the same.

In its broader interpretation, productivity improvement can thus be seen to encompass virtually all of the services provided by the MIS department.

By applying the same theme of productivity improvement to the collective efforts of MIS, organizational development and industrial engineering, their inherent similarities are more easily recognized.

It also provides a common frame of reference for understanding their differences, which relate not to the purpose of the efforts but to the field of discipline and methods being applied to carry out those efforts.

#### How to coordinate

The disciplines involved in each of these productivity improvement approaches are fundamentally different. Most practitioners become expert in only one field of study, remaining relatively ignorant of the others. Having separate educational roots, practitioners from these different disciplines have found no common frame of reference or language for communication. Their individual productivity improvement efforts have been initiated independently of each other, with uncoordinated use of resources and a resulting tendency toward suboptimization.
This is illustrated by the

different focus of interest by practitioners from MIS vs. those of organizational development vs. members of industrial engineering. For example:

In its normal course of business, today's MIS depart-ment deals primarily with computer and data technologies, and its members con-centrate on the application of computer-based techniques to a given user's job.

■ In contrast, organizational development practitioners emphasize the application of human motivation factors and group proces techniques to improve work-er efficiency.

Still different are members of industrial engineer-ing, who focus their efforts on work-flow analysis, work measurement and work simplification.

All of these approaches are aimed at helping the user/worker become more productive, but each discipline approaches the situa-tion with a different set of analytical tools. Given that

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productivity improvement is the common theme needed to encompass these different disciplinary approaches, how can coordination be accomplished across the fragmented efforts?

Coordination might come from the productivity department, since its charter seems to lie in that direction. But could its practitioners appreciate the technical complexities of systems development projects well enough to integrate them

with organization development and industrial engineering approaches?

neering approaches?
What about the industrial engineering organization?
Although its members often make use of some systems analysis tools, it typically remains aloof from both MIS and organizational development.

Coordination might come from the MIS organization. MIS is typically much larger than either the productivity or industrial engineering departments. It has traditionally been the leader in introducing and managing complex new concepts, from computer technologies to data management methodologies. Could MIS managers learn to appreciate the subtleties of the other productivity-related disciplines?

A recent poll of major U.S. corporations indicates that leadership for productivity improvement coordination actually resides in a variety of organizations, including

human resources, quality assurance and MIS. The viability of MIS as the productivity coordinating function seems to depend upon the type of business, the perceived role and reputation of MIS and the extent to which MIS has a track record of being proactive in company business affairs.

#### Wider understanding

Whether it takes a leadership position or not, the MIS organization must undergo a growth in understanding about the need for interaction with other productivity improvement efforts. The convergence of other work improvement efforts on the MIS user community can only lead to questions about how all of these projects and programs relate to each other and the need for coordination of planning and implementation.

An examination of companies at various stages of dealing with productivity improvement convergence indicates that there is an evolutionary cycle in process. The cycle begins with initial awareness of the situation and proceeds eventually to formalized integration of all productivity improvement efforts.

To highlight the evolutionary process, it has proven helpful to categorize the evolutionary stages into five levels of development. Evidence to date indicates that each company is proceeding along roughly this same sequence, level by level. The examples that follow illustrate cases where MIS is not only involved but is actually taking the lead in bringing about coordination and integration of productivity efforts:

Level 1: Awareness that MIS is in the productivity business. Members of the MIS department of a government contractor have recently become aware that there is an overlap between their information system development projects and productivity improvement efforts being conducted for the same users by the human resources department. In com-paring and contrasting the two kinds of effort, they have come to realize that both have the purpose of improving user productivity, even though they apply completely different approaches. They are now beginning to refer to their own MIS system development projects as productivity improvement projects.

Level 2: Familiarity with other groups also in the pro-ductivity business. The MIS director of a large semiconductor company has asked representatives of other productivity-related groups to attend its monthly staff meetings to provide a show and tell of their methods and services. At each staff meeting, a representative from one of the groups presents an overview of his group's methods and scope of work. To date, there have been reports on statistical quality control, industrial engineering, employee involvement teams and value engineering. The MIS director has asked each of his managers to de-termine which of these non-MIS methods and services may be related to work per-

formed by his department. Level 3: Sharing of ideas



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between MIS and the other productivity groups. The director of an insurance company's MIS organization has begun including the corporate productivity manager in some of his data and information planning efforts. Both the MIS director and the productivity manager recognize that there are relationships between the systems development and productivity improvement projects, and they are exploring ways to coordinate

Level 4: Collaboration on joint productivity improvement efforts. The MIS organization of a utility company has established a technology consulting function to provide front-end coordination of all productivity-related user services, including those of MIS, industrial engineering, human resources and so on. They employ a matchmaker strategy

to assemble an ad hoc team of representatives who can deal with a given user organization's people, data and technology issues in a coordinated way. Currently, this coordination is performed on a voluntary basis, aided by the fact that all user service functions report to the same vice-president of the company, who sponsors the idea.

Level 5: Full coordination of all productivity groups. An eastern bank has formed a new corporate resource division to encompass its MIS, industrial engineering and organizational development functions. All responses to requests, projects and other contacts with company personnel and organizations are orchestrated under a common frame of reference.

Cross-training has made all analysts of all disciplines aware of the

total spectrum of methods available, whether they are primarily specialists in systems analysis, work-flow analysis or employee motivation techniques.

Planning of service begins with an interdisciplinary approach, with subsequent specialized application of methods taking place only after the true nature of the user situation has been ascertained.

In each of the examples shown above, the MIS organization has taken a very proactive role in dealing with the convergence issues. Its members have embraced productivity improvement as a concept that will help them provide better service to the user community. Unfortunately, there are many other cases where members of MIS have remained uninvolved, and productivity improvement has grown in size and impor-

tance to the company under the leadership of some other company function.

#### Taking the lead

The trend toward coordination and eventual integration of all productivity improvement efforts (including those of MIS) must be taken seriously. The question of turf must sooner or later be addressed. Within each company, some organization will end up being responsible for leading and coordinating the integration of productivity improvement programs:

Some group will end up taking responsibility for solving the problem of communication among the multiple disciplines associated with the user productivity situation.

the user productivity situation. Will it be an enlightened MIS organization that demonstrates the necessary leadership and vision? Or will the integration effort come from outside of MIS, perhaps from industrial engineering, human relations or the productivity department? In companies that are now experiencing multiple, fragmented productivity improvement efforts, the MIS organization is facing a fork in the road.

One path leads to an expanding leadership role with greater involvement in company affairs; the other leads to a diminishing role as another organization begins to call the shots. MIS can wait passively on the sidelines or it can rise to the occasion and take the lead.

#### About the authors

Dave Ackley is a senior consultant with Holland Systems Corp., Ann Arbor, Mich., which specializes in methods and software for planning of company data and information systems. He has more than 20 years of experience in computer-related planning.

Pat Ackley is corporate productivity manager for National Advanced Systems, Inc. in Mountain View, Calif. Her experience includes productivity management and consulting.

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CPUs running DEC's VMS operating

A spokesman said Univault chronicles only those files that have been updated or created since the last archival and provides a record of all archived files. Univault also saves all directory structures and files for each volume as a backup utility.

Univault is priced at \$3,000 per CPU or \$5,000 per cluster. Enzed Systems, 336A Village Lane,

Los Gatos, Calif. 95030.

2 J & H Software, Inc. has introduced a Screen Format Utility (SFU) for the IBM System/34 and 36 minicomputers.

According to a spokesman, SFU gives users the ability to design screen layouts interactively, using word processing functions such as text centering or moving lines. SFU automatically generates screen and data specifications with user-defined attributes.

A one-time, object-code-only li-cense fee for SFU is \$450. J&H Software, Suite GL-7, 2993 S.

Peoria St., Aurora, Colo. 80014.

Boston Systems Office has introduced a relocatable assembler for Intel Corp.'s 8096 microprocessor.

The BSO/Assembler II is designed for Digital Equipment Corp.'s VAX and Microvax computer systems. The 8096 assembler is written in VAX native code and supports the Intel in-struction set with mnemonics and syntax. All executable instructions and addressing modes correspond to the Intel-defined assembly syntax. The assembler supports data storage directives, including real-number constants and 32-bit expressions.

BSO/Assembler II reportedly provides full relocation facilities, conditional code and unlimited symbol storage. Its base price is \$3,900.

Boston Systems Office, 469 Moody St., Waltham, Mass. 02254.

■ Wizard Computer Products has introduced an on-line facility that allows authorized users to monitor simultaneously the material on terminal network users' screens.

Wizard View reportedly is designed for applications running un-der IBM's DOS with CICS. A signal notifies the user that the screen is being monitored. If used with the company's Wizard Mail electronic mail system, an electronic mail message can be sent to a user-defined list of management personnel.

Wizard View costs \$500. Wizard Computer Products, P.O. Box 1867, Greenville, S.C. 29602.

m TMM Systems, Inc. has announced two added features for its **Tmmsorts Parent Product sorting** system for IBM Series/1 users.
A spokesman said the Perfor-

mance Plus feature results in faster throughput than the 84 logical re-cords per second achieved by Tmmsorts Parent Product. The Random Record Locator feature, com-bined with Parent Product, provides users with access to single logical records or record groups directly by sort-key specification.

The price for Tmmsorts Parent Product begins at \$549 and will in-crease to \$689 April 1; Performance Plus is available for an additional

\$279; and Random Record Locator is priced at \$425.

TMM Systems, 1014 S. Beacon Blvd., Grand Haven, Mich. 49417.

#### **PRODUCTIVITY AIDS**

■ Greene Software has announced 2.0 versions of its Queue/34 and Queue/36 productivity tools for IBM System/34 and System/36 minicomputer users.

A spokesman said Queue/34 and Queue/36 now establish up to 100 auxiliary batch job queues, which allow user jobs to run independently and concurrently with jobs in the System Job Queue. Features of the 2.0 versions include programs to automatically convert multiple libraries to call any queue. Through the use of interactive screens, users have control of their job's position in the queue, status, start time, execution priority and completion mes-

Queue/34 and Queue/36 are available for a one-time license fee of \$395 each per CPU.

Greene Software, P.O. Box 23, Victor, N.Y. 14564.

#### **APPLICATION** PACKAGES

Management Decision Systems, Inc. (MDS) has introduced an expert system for promotion analysis on IBM mainframes under VM/CMS and Prime Computer, Inc. superminicomputers

Designed for marketing and pro-

motion managers, Promoter is said to measure incremental sales and profits from past promotions and to determine the best allocation of resources for future promotions. It is menu-driven and evaluates the incremental sales resulting from various promotional efforts.

Promoter costs \$25,000. 200 Fifth Ave., Waltham, Mass. 02254.

■ CAE Systems, Inc. has announced that its CAE 2000 design automation tools are now available for Digital Equipment Corp.'s Vaxstation I under Micro VMS and DEC's VAX superminicomputer under

VMS Release 4 and Decshell.
A spokesman said CAE 2000 software running on a Vaxstation can op-Continued on page 82

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| Burroughs Poll/Select | Asynch
| SDLC | X.25 Other |
| How many of your sites are 300+ miles from your host computer? Type of Network: ☐ Start-up ☐ Existing RCA Cylix Communications Net

Why key DP/MIS managers are keeping RCA Cylix a secret.



Continued from page 81
erate in a stand-alone configuration or as a node in a CAE Worksystem distributed network environment. CAE 2000 is set for shipment beginning in July. CAE 2000 for the Vaxstation costs between \$22,000 to \$50,000. An entry-level CAE 2000 for the VAX 8600 costs \$124,000.

CAE Systems, 1333 Bordeaux Drive, Sunnyvale, Calif. 94086.

Santa Monica Software (SMS) has announced an electronic mail system for Hewlett-Packard Co.'s HP 3000 superminicomputer.

SMS Mail runs on a single HP 3000 and can be accessed through any standard Ascii terminal, according to a spokesman. Through SMS Mail, users can send and receive messages after entering system identifications or user-defined names. Users are notified when they have messages waiting to be read, and they can verify if

ssages have been received.
Messages or files can be reviewed, printed, deleted or copied onto a separate disk file. Messages can also be reviewed or deleted after being sent. An on-line Help facility explains each command, and a distribution list allows users to maintain public or private mailing lists for messages.

SMS Mail costs \$995. SMS, Suite 700, 11355 Olympic Blvd., Los Angeles, Calif. 90064.

■ Data 3 Systems, Inc. has unveiled a financial accounting package for its MRPS 38-A MRP II manufacturing software for IBM System/34, 36 and 38 minicomputers.
A spokesman said MRPS 38-A Fi-

nancial Package adds general ledger, accounts payable, payroll, fixed as-sets and accounts receivable to the MRP II program. Written in RPG-III, the MRPS 38-A uses System/38's data base management features. Using an open-coded data base, the user can define data fields within the system's master files. The variable list Reportwriter allows the user to define report formats.

Transactions can be deferred daily from manufacturing to accounting and are then immediately available for reports or screen inquiries. Data entered is automatically validated and posted to applications ledgers and to the general ledger every day, not at the end of the period. Established accounting structures, style and procedures can be maintained in changing over from existing accounting methods.

MRPS 38-A Financial Package. scheduled to ship in July, costs \$94,000 for System/38 and \$50,000

for System/34 and 36.
Data 3 Systems, P.O. Box 441, Santa Rosa, Calif. 95402.

■ Business Controls Corp. (BCC) has announced VAX Fortran Report Builders-1 (RB-1), a Fortran version of its RB-1 common data dictionary, Cobol and Basic report writer for Digital Equipment Corp. VAX CPUs.

The product reportedly allows Fortran users to join Cobol and Basic users in automating the production of optimized report code. RB-1 works with all standard RMS data files and uses the common data dictionary for definitions.

RB-1 generates a source program by combining the user specification file with either a BCC-supplied template program or a user-customized template. Maintenance of RB-1 report programs is accomplished with the RB-1 menu, general specification maintenance screens and the RB-1

Report Painter. RB-1 costs \$4,500 for the first system and \$3,000 for each additional

BCC, 3-7 W. First St., Clifton, N.J.

DeCarlo, Paternite & Associates, Inc. has announced a version of its General Ledger software package for the Hewlett-Packard Co. HP 3000 minicomputer.

A spokesman said the General Ledger package, written in Cobol, features a user guide supported by on-line Help screens, 18-digit account ability, two-year budget history and an on-line report writer.

The General Ledger package for the HP 3000 is priced at \$11,000.

DeCarlo, Paternite & Associates, P.O. Box 22276, 3777 S. Green Road, Cleveland, Ohio 44122.

Outlook Software, Inc. has announced an updated version of its Outlook/GL General Ledger Sys-tem for the IBM System/38 mini-

A spokesman said Outlook/GL Version 2 enhancements include online inquiries, immediate user access to account balances and activity ref-erence numbers. On-line search capabilities during data entry and data

maintenance have also been added. Enhancements to the Outlook/GL Report Write portion of the system include the ability to perform calcu-lations at report print time, basic spreadsheet capabilities and a feature allowing column calculations to be executed between columns and between a column and a user-specified constant.

Outlook/GL Version II costs \$10,000.

Outlook Software, Suite 117, One Woodfield Lake, Schaumburg, Ill. 60195.

System Support Products, Inc. has announced an updated version of its System/34-System/36 Spreadsheet software for IBM's System/34 and 36 minicomputers.

A spokesman said features of the release include replacement of the Copy Cell Formula function in the spreadsheet enter/update program nued on page 84

Terminal/System Architecture in Data Processing

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Toll Free: 1-800-453-9454



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4/9 Seattle, WA 4/24 Chicago, IL 4/16 Los Angeles, CA 5/14 Indianapolis, IN 4/18 New York, NY

#### **DISTRIBUTION REQUIREMENTS PLANNING** (8:30 AM - 3:30 PM)

4/2 Dallas, TX 5/15 Detroit, MI 4/16 Cleveland, OH 5/16 Boston, MA 4/24 Montreal, Quebec 5/29 Greensboro, NC 5/7 Philadelphia, PA

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Seminar

Date/City

(8:30 AM-12:00 Noon)/ ACCOUNTS RECEIVABLE (1:00 PM - 3:30 PM) 4/25 Atlanta, GA 5/22 Toronto, Ontario 5/8 Chicago, IL 5/30 San Francisco, CA

#### FIXED ASSET ACCOUNTING/CONTINUING PROPERTY RECORDS (8:30 AM - 12:00 Noon)

4/12 Philadelphia, PA 5/9 Atlanta, GA 5/7 Chicago, IL 5/23 New York, NY

#### PURCHASING & MATERIALS MANAGEMENT (8:30 AM - 12:00 Noon)/ ACCOUNTS PAYABLE & PROCUREMENT MATCHING (1:00 PM - 3:30 PM)

4/3 Dallas, TX 5/8 Philadelphia, PA
4/9 San Francisco, CA 5/14 Boston, MA
4/11 Philadelphia, PA 5/15 Indianapolis, IN
4/17 Cleveland, OH 5/16 Detroit, MI
4/23 Charlotte, NC 5/23 Salt Lake City, UT
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#### MANUFACTURING RESOURCE PLANNING (8:30 AM - 3:30 PM)

4/4 Dallas, TX 5/14 Detroit, MI 4/10 San Francisco, CA 5/15 Boston, MA 4/18 Cleveland, OH 5/16 Indianapolis, IN 5/9 Chicago, IL 5/23 Toronto, Ontario 5/9 Philadelphia, PA 5/29 Somerset, NJ

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American Software, Inc. 443 East Paces Ferry Road, Atlanta, Georgia 30305 or call (404) 261-4381

Continued from page 82

with a Replicate Cells function, allowing cells to be copied to another range of cells, and a Delete Row/Column function, an Insert Row/Column function and a Global Options function for the

spreadsheet program.
Other features reportedly include an Average Value Cell command for a row or column of cells, a Count command for the return of filled cells in a row or column and a Maximum Value command for returning the maximum

value in a row or column.

A permanent license for System/34-System/36 lease 3.0 is priced at \$295.

System Support Products,

7620 Arlen St., Annandale, Va. 22003

■ Inter-Systems Corp. has announced the Universal Tracking and Mailing System for Wang Laboratories, Inc.'s VS series minicomput-

Unitrac reportedly can be used in any applications that require the categorization and tracking of individuals and organizations, including sales prospect tracking and vendor tracking.

The system supports multiple projects, allowing different departments in the same organization to create, maintain and track different groups of individuals and organizations.

It includes a selection module that is said to allow selection by city, state, zip code and other keys, which can include date and number ranges. Unitrac can print mailing labels and index cards and provides an inter-face to VS word processing for letter writing and enve lope printing, the vendor said

Unitrac is priced from \$2,500 for the VS 15 to \$6,000 for the VS 300.

Inter-Systems, 259 E. Michigan Ave., Kalamazoo, Mich. 49007.

REM Associates and Deloitte, Haskins & Sells accountants have announced agreement to include REM's Remdoc documentation package for IBM System/34 and 36 minicomputers as an optional module provided with software from the accounting firm.

Remdoc is included in Deloitte, Haskins & Sells' S/PM-System/Process Manufacturing package.

The Remdoc package costs \$1.250

REM Associates, 207 Virginia Ave., San Francisco, Calif. 94110.

■ Cerner Corp. has announced that its Pathnet Information Laboratory System is now available for Digital Equipment Corp. VAX series CPUs.

The product had previously been available only for Instruments, hardware.

spokesman said the VAX version of Pathnet can operate in hospitals with 300 to 1,800 beds. Pathnet uses DEC's Vaxcluster capabili-ties, allowing multiple VAX CPUs to access shared disk storage devices and to be linked by an Ethernet localarea network.

Pathnet applications include order entry, results entry and reporting, inquiries to patient test results, collection lists and worksheets as well as management tools such as quality control, financial operating statements and performance reports, the vendor said.

The price for Pathnet for the VAX series ranges from \$180,000 to \$2.5 million, depending on the number and size of hospital processors.

Cerner, Suite 106, 2800 Rockcreek Pkwy., Kansas City, Mo. 64117.

Wizard Computer Products has announced Release 3.0 of its electronic mail system, Wizard Mail, for IBM's CICS, including a feature that automatically notifies the sender when the mail has been read by the recipient.

A spokesman said a group distribution feature allows mail to be automatically sent to departments or divisions Wizard Mail users, and a directory feature lists messages by subject and sender.

Wizard Mail requires IBM's Basic Mapping Support and Vsam

Wizard Mail Release 3.0

Wizard Computer Products, P.O. Box 1867, Greenville, S.C. 29602.

■ Tesseract Corp. has of-fered Profile, a data base report function for its Claims Processing System (CPS) health care administration program for IBM and compatible mainframes.



system an unmanageable muddle of isolated workstations and departmental computers?

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UNIX System V can support a number of users doing varied tasks at the same time. All sharing a central processing unit and peri-pherals. All benefiting from a larger base of information. All works a manageable whole. All contributing to bottom-line cost savings because equipment and computing

A spokesman said Profile allows users to report on any data element in the CPS; up to 10,000 report options are available. Available reports reportedly include baseline information that identifies where funds are spent, exception information that identifies abnormally high or low use and ranking information that shows highs and lows in both dollars and numbers of procedures.

CPS costs from \$100,000 to \$300,000; the Profile func-

tion is included at no additional cost.

101 Howard Tesseract, San Francisco, Calif. 94105.

■ Henco Software, Inc. has announced that its Info-Versagraph relational graphics management package and Info-Text document retrieval system are now available on Harris Corp. computers.

Info-Versagraph and Info-Text are integrated with Info, Henco's relational data management system and fourth-generation language Info-Versagraph reportedly allows users to plot graphs from ad hoc figures, existing data files or both. Info-Text includes a query facility that is said to allow information retrieval by word combina-tions or conditional logic. Info-Text costs \$14,300,

Info-Versagraph costs \$10,000.

Henco Software, 100 Fifth Ave., Waltham, Mass. 02154

Consulting **■** Computer Center, Inc. has introduced distribution and financial software packages for IBM's System/36 minicomfor puter. Modules for ware-house receiving and inven-tory control were also added to the company's System/38 applications series.

The System/36 Distribution/Financial Software includes modules for entry/invoicing, inventory control, purchasing/warehouse ceiving, accounts receivable, accounts payable/check writing and general ledger. All six modules were originally developed in RPG-III for the System/38.

System/36 modules are priced from \$4,000 to \$6,000. System/38 modules cost from \$10,000 to \$20,000.

Computer Consulting Center, 575 Eighth Ave., New York, N.Y. 10018.

Access Telecom has announced the Sales Order Entry system for its Access/ 34/36 asynchronous com-munications software for IBM System/34 and 36 minicomputers.

spokesman said the package allows interactive sales order entry through microcomputers, teleprinters and terminals directly into the minicomputer. The system is an extension of IBM's Management Distributor's Accounting System software, allowing order entry from distributors, customers or sales representatives.

Access/34/36 supports up to eight users simultaneously and can be expanded to 32 users. The Sales Order Entry system costs \$2,450.

Access Telecom, Suite 600. 200 W. Madison, Chicago, Ill. 60606.

 Dataplotting Services, Inc. has announced Inte-grated Petroleum Data Systems (IPDS) software for the acquisition, storage, retrieval and processing of oil and gas well data for use on Digital Equipment Corp. VAX superminicomputers.

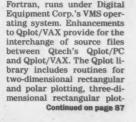
IPDS consists of a group of applications programs inte-grated with Advanced Data Management, Inc.'s DRS data base management system, the evndor said. The system is said to process management information, drilling data, production statistics, logging, analyses and geological data. It reportedly facilitates data entry and verification, report generation, chart production, well location and contour mapping and per-spective views of geological formations.

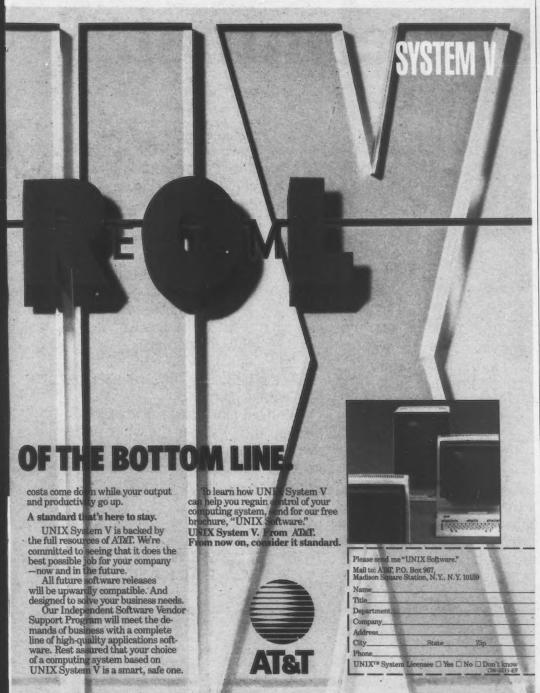
IPDS software costs from \$50,000 to \$100,000.

Dataplotting, 255 Duncan Mill Road, Don Mills, Ont., Canada M3M 3K9.

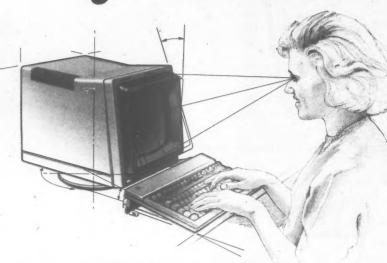
Qtech Associates has released an enhancement of its Qplot/VAX device-inde-

pendent graphics software. Qplot/VAX, written in Fortran, runs under Digital





# We couldn't improve on you. So we improved on your terminal.



You're as good as you can be, just the way Nature made you. Unfortunately, Nature doesn't make computer terminals. So at Hewlett-Packard, we've been making improvements on terminals, to make them work more agreeably with you.

Our newest display terminal, the HP2392A, is a case in point. It has an adjustable keyboard, a screen with an integral tilt, and a monitor that can revolve.

So your people won't have to adjust, tilt, or revolve to use it.

The keyboard can be angled to lay flat on a desk, and it has contoured keys

arranged in clusters, to sit easily beneath the hands. We also made it detachable, to sit easily in the lap.

And all that is just with the unit turned off. Turn it on, and you'll see the famous HP display screen, with characters that are sharp, clear, and distinct.

What's more, the HP2392A has ANSI, so it's DEC-compatible.

All for only \$1375\*

The HP2392A. The terminal that works with people.

Find out more. Just call your local HP sales office, listed in the white pages. Or write to Terry Eastham, Hewlett-Packard, Dept. 003215, 8020 Foothills Boulevard, Roseville, CA 95678.



Continued from page 85 ting with hidden line removal, flow

charting, mapping and typesetting.

A one-time, single-CPU proprietary license agreement for the

Qplot/VAX package costs \$3,000. Qtech Associates, P.O. Box 952, Old Lyme, Conn. 06371.

Harris Data Service, Inc. has announced Release 1.2 of its System/ 38 Fixed Assets software for the IBM System/38.

Release 1.2 reportedly can maintain a third set of books for state tax reporting purposes. The release has also been updated to reflect new Accelerated Cost Recovery System (ACRS) guidelines on real property and straight-line ACRS recovery pe-

System/38 Fixed Assets Release with source code, costs \$3,500.

Harris Data Service, 11629 W. Dearborn Ave., Milwaukee, Wisc.

■ Computervision Corp. has re-leased the Machine Tool Manage-ment (MTM) module for its Factoryvision factory floor management

information system.

The MTM module directly accesses and controls machine tools and automated work centers on the shop floor, the vendor said. It comple-ments the Planning and Production modules of Factoryvision.

Factoryvision runs on Sun Microractoryvision runs on sun micro-systems, Inc.'s micros, which are based on Motorola, Inc.'s 68000 mi-croprocessor. The system is used to distribute and control graphics, text and numerical control information created on a computer-aided design and manufacturing system. The MTM module allows workers to control machining centers locally without tape handling. The data required to control machinery is distributed through a Machine Interface Device (MID) at each work center.

A Factoryvision system supporting 16 users includes a Computervision Distributed System 3901 CPU, an MID, production and MTM software and 16 alphanumeric graphics terminals. The price per user for this configuration approximately

Computervision, 15 Crosby Drive, Bedford, Mass. 01730.

■ Hewlett-Packard Co. has announced HP FE finite-element software for the HP 9000 engineering desktop CPUs.

HP FE is aimed at small- and medium-size companies to be used as an alternative to mainframe-based or time-shared finite-element analysis, a spokesman said.

Design capabilities of the product reportedly include a library made up of springs, beams, shells, plates, membranes, solids and boundary heat-transfer elements. HP FE is also said to provide automatic mesh generation for models with complex geometry, allowing a design engineer to choose parameters at the keyboard.

HP FE software costs \$14,000. HP, 1820 Embarcadero Road, Palo Alto, Calif. 94303.

A spelling checker and search and retrieval capabilities have been added to Datapoint Corp.'s Pro-Vista series of office automa-

tion products for its RMS operating

Vista-Spell II is an interactive spelling checker for 71,000 words in the Houghton Mifflin Co. lexicon of Users can create personal dictionaries of up to 1,500 words, according to a spokesman. The program highlights potential misspellings during editing. Vista-Spell II is available for a one-time license fee of \$1,500. The Vista-Finder filing and re-

trieval tool allows a user to search for, locate and retrieve electronically stored information from Datapoint's Vista-Word or text file-formatted documents. Searches can be limited to predefined documents or can be based on results of preliminary searches. Vista-Finder is licensed for

Datapoint, 9725 Datapoint Drive, San Antonio, Texas 78284.

M Auto-Trol Technology Corp. has announced the addition of the A-Frame drafting package to its Series 5000 Advanced Graphics Soft-ware series for computer-aided design and manufacturing applications running on Auto-Trol worksta-

A spokesman said A-Frame can be used as a stand-alone package or with the company's Steel-3D struc-tural steel analysis and design sys-

As a stand-alone package, A-Frame enables the drafter to generate framing plans, elevations and column schedules by defining member end points and by picking the number designation from a menu. When used with Steel-3D, a structural engineer can extract plans and elevations from the structural model, add comments for the drafter and pass the

A-Frame and Steel-3D work on Auto-Trol's Advanced Graphics Workstation, a 32-bit distributed processor.

A-Frame costs \$5,000.

Auto-Trol, P.O. Box 33815, 12500 Washington St., Denver, Colo.

Honeywell, Inc. has announced the Tracts Tumor Registry system for use by hospitals in organizing and analyzing tumor registry data. The package runs on Honeywell's DPS 6 line of minicomputers.

Reportedly, the software complies with cancer program guidelines es tablished by the American College of Surgeons. Tracts Tumor Registry is available as a stand-alone product or

Continued on page 90

Kodak presents intelligent conversation.

Insert cartridge.

One-sided or two?

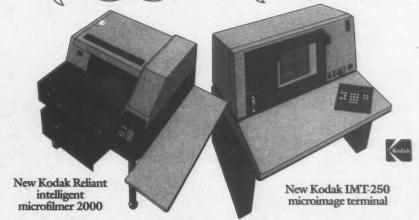
Skipped a batch. Error reset.

Wrong cartridge.

Print 6.

Prints to Joe.

Check p.o. date.



These new micrographics units speak your language. Kodak put a microprocessor in each of them and programmed them to communicate, not only with each other, but with their

They monitor themselves continuously. Stop if something goes wrong, then tell the operator, in plain English, how to

Programmed to do work your way, they file and find documents as fast as electrons can travel.

Kodak's fastest and smartest.

Matter of fact, they're the fastest, smartest, most accurate image management machines we've ever made. That's why we call them The Whiz Kids.

To apply their intelligent conversation, unerring accuracy and laser-like speed to your informa-

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tion handling needs, return the

Eastman Kodak Company, Business Systems Mar-kets Division, Dept. DP5521, Rochester, NY 14650. I'd like to know more about Kodak business imaging ☐ Have your representative contact me.

☐ Send more information. We capture and store\_\_\_\_\_ \_incoming documents

per day. We retrieve\_ \_\_\_\_documents per day.

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Symphony. It's the one software

To meet the varied needs of your end users, you don't need more software. You simply need the one software that does more. Symphony™ from Lotus.

With Symphony users get a comprehensive software program with five basic functions—spreadsheet, database management, graphics, word processing and communications. These five functions can be used alone, together or in any combination. And with Symphony, users can start with one function and grow into others as their needs change.

#### Users can even create customized applications.

With Symphony's powerful command language, end users can save time by creating their own applications either for themselves or for entire departments. And users don't have to be programmers to build an unlimited variety of turnkey applications.

#### With Add-Ins, Symphony grows as you grow.

Symphony's unique open-ended architecture allows you to expand the functionality of the basic program with Add-In products. These Add-Ins work like Symphony—and with Symphony—so users don't have to learn a new language. Spelling Checker and Text Outliner are already available. And a variety of future Add-Ins and industry specific applications are now being designed by Lotus and qualified third-party developers to further enhance Symphony's capabilities.



# fits all. solution for more PC users.

Our micro-to-mainframe link will tie Symphony to your existing environment.

Later this year, Lotus will introduce a new micro-to-mainframe Add-In product. Developed jointly by Lotus and DCA, this new link will allow designated PC users to transfer data to and from your mainframe computer. Mainframe data will be available on their PC spreadsheets in useable form, eliminating the need for retyping.

If your corporate environment already includes 1-2-3, Symphony makes an even easier fit. It has a familiar user interface and reads

1-2-3 data.

And like all Lotus products, Symphony is supported by the industry standard in service and support, with training programs, Courseware, and Lotus Books.

Symphony Software. The more your people do, the more it will do for your people. After all, you wouldn't expect less from the software that was named "Product of the Year"\* and easily became 1984's best selling new software product.

For more information on Symphony Software, contact your Lotus Marketing Representative or local authorized Lotus dealer.

Symphony \*\*

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Continued from page 87

the same data base as the company's Tracts Medical Record Management

The price for Tracts Tumor Regisalone is \$2,500; the price with DPS 6/10 hardware is \$16,000. The price when integrated with Tracts Medical Record Management System is \$4,000.

Honeywell, Honeywell Plaza, Minneapolis, Minn. 55408.

Additional signal processing commands and a prompting feature have been added to Signal Technology, Inc.'s Interactive Laboratory ogy, Inc.'s Interactive Laborator, System (ILS) signal processing soft-ware package for Digital Equip-ment Corp. VAX and PDP-11 proces-sors, Data General Corp.'s Eclipse-MV and Masscomp Co.'s MC500 series minicomputers.

ILS 5.0 is an integrated set of approximately 90 Fortran programs that offer waveform display and editing, digital filtering, spectral analysis, speech analysis/synthesis and pattern analysis capabilities, a spokesman said. The software is designed for speech analysis, noise and vibration seismology acoustics and radar applications

The price of ILS 5.0 ranges from \$4.500 to \$14.800.

Signal Technology, 5951 Encina Road, Goleta, Calif. 93117.

■ The Board of Realty Information Systems (Boris) has announced two imaging packages for the real es-tate industry. The packages are available as additions to Boris' turnkey real estate industry sys-

tems based on Prime Computer, Inc. computers under Prime's Primos operating system.

According to a spokesman, Photo-List is an integrated information system, multiple listing service and photo previewing system. The on-line photo-imaging process allows the user to call photos up on a dumb terminal. Photos and listing data can be called up on remote terminals in individual realty offices.

The spokesman said Laser-List provides full-color documentation of properties in metropolitan areas. Color video images are permanently stored on a laser disk in a real estate office and may be accessed via an inhouse terminal and color monitor.

Photo-List and Laser-List are priced at \$30,000 each.

Boris, 111 Hollister Building, Lansing, Mich. 48933.

Continental Healthcare Systems. Inc. has announced a patient control software package for hospitals that runs on Texas Instruments, Inc. computers under TI's DX-10 operating system.

The Patkon package is made up of modules such as electronic mail, ancillary department support, food services, pharmacy management and ra-diology with a financial system interface. Patkon reportedly features automatic patient admission, transfer and discharge, as well as automatic charge capture and processing of all orders. All printed requisitions and reports can be custom-designed, according to the vendor.

Other Patkon functions include on-line input of standing orders, on-line screening of allergy and diagnosis information and a feature that automatically warns of potential hazards, such as drug or food aller-

gies, for improved patient safety.

The price of Patkon is approximately \$200,000 for the stand-alone package, including all modules. The price of a turnkey system, with hardware and support, starts at \$300,000.

Continental Healthcare Systems, Suite 550, Building 6, 8900 Indian Creek Pkwy., Overland Park, Kan. 66210.

Berne Electronics, Inc. has re-leased its Interactive Circuit Analysis Program (Icap), for Digital Equipment Corp.'s PDP-11 computers running under DEC's RSX-11M and RSX-11M+ operating systems.

The package allows users with litthe computer-aided design experience to perform AC/DC and transient analysis, the vendor said. Features include 50-node 200-branch capability, selective parameter output control, macro command for subcircuit models, a built-in text editor and conversational free-format input lan-

Ican costs \$7,000.

Berne Electronics, 120 Dartmouth S.E., Albuquerque, N.M. 87106.

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Signature Registrations cancelled later than April 5 are subject to a \$50.00 service charge. Registra may be transferred at no charge.

Ext

#### DATA BASE MANAGEMENT SYSTEMS

Frey Associates has announced that Version 1.1 of its Themis package now supports Oracle Corp.'s Oracle relational data base management system running on Digital Equipment Corp.'s VAX superminicomputer series.

The Oracle support is in addition to support for DEC's VAX Data-trieve. Additional Themis 1.1 enhancements reportedly include graphics capability, on-line Help screens, English language rephrasing of the data base query, an on-line dictionary and the ability to delete the meanings of previously defined words.

Themis Verson 1.1, scheduled to released this month, costs \$24,000.

Frey Associates, Chestnut Hill Road, Amherst, N.H. 03031.

Software House has announced Version 4 of System 1032, a relational data base management system running on the Digital Equip-ment Corp. VAX series under DEC's

# The 2400 bps Difference

Reduce Costs and Optimize Productivity



TYMNET's 2400 bps service reduces connect time by 60-80%, according to experiments conducted by NEWSNET, the world's largest on-line database of business newsletters. And the longer the session, the greater the proportional savings in time.

Since time is money...REDUCED CONNECT TIME MEANS REDUCED EXPENSE.

And that's not all.

TYMNET lets you improve productivity because employees can now spend more time working at their terminals and less time waiting on data transmission.

TYMNET's 2400 bps dialup service supports the new generation of low-cost modems. Lease or purchase them directly from TYMNET, your Single Vendor Solution.

WITH REDUCED CONNECT TIME AND MES-SAGE UNIT CHARGES, YOUR MODEM CAN PAY FOR ITSELF... AND LET YOU PERFORM MORE FOR LESS. AND ISN'T THAT WHAT IT'S ALL ABOUT?

Call or write for more information regarding TYMNET's 2400 bps Dialup Access and 2400 bps Modems.



TYMNET, Inc. 2710 Orchard Parkway San Jose, CA 95134 (408) 946-4900



**Private and Public Data Networks** 

TYMNET

A McDennell Couples Company

Continued from page 90 VMS operating system.

Version 4 is said to manage data bases shared on multiple processors in Vaxclusters. The latest release supports Vaxcluster features, including shared disk storage devices. Proprietary algorithms control multiple-CPU updates. The software uses the VAX/VMS Distributed Lock Manager and an internal lock management

module to aid reliability.

System 1032 Version 4 costs \$85 for a 60-day evaluation. First-copy li-censes range in price from \$8,000 for a Microvax I to \$60,000 for the VAX 8600.

Software House, 1105 Massachu-setts Ave., Cambridge, Mass. 02138.

Systems Programming Ltd. has announced that its Adaprep preprocessor for Software AG of North America, Inc.'s Adabas data base management system is now available for Digital Equipment Corp. superminicomputers series running VMS.

Adaprep previously had been available only for IBM mainframes.

A spokesman said Adaprep is a dictionary-driven, high-level data management language intended to cut programming effort by eliminating the need for direct call programming and by supplying procedures to build a data dictionary.

Adaprep integrates the data dic-

tionary by using the file and field attributes to generate executable code. In additional, the preprocessor updates the data dictionary with field and file information to produce reports on data base usage

Adaprep for VAX costs \$8,500.

Programming, 131 Sustems Steuart St., San Francisco, Calif. 94105

#### REMOTE COMPUTING SERVICES

General Electric Information Services Co. has announced that Leading Software Technologies Corp.'s The Intelligent Assistant (TIA) applications development system is now available on GE's processing network.

TIA operates on IBM's OS, MVS and DOS/VSE operating systems. It is available through GE Information Services' Mark 3000 service. TIA reportedly is designed to create and document application systems from the definition of inputs and outputs.

The product creates on-line and batch systems, can be used for prototyping and generates data base management system interfaces

Use of the TIA through GE Information Services is priced at approximately \$100 per 1,000 lines of generated Cobol code. The product is also available on a perpetual license for installation on in-house computers at \$350,000.

General Electric Information Services, 401 N. Washington St., Rockville, Md. 20850.

M National Data Corp. has announced software enhancements to Time-Sharing Service and its Cash Management Datastream Service time-sharing services that allow for the creation of charts and graphs that can be downloaded to the IBM Personal Computers. Called its Decision Display Sys-

tem, the software reportedly runs on the vendor's mainframe and uses client data to produce the charts. Its output on a Personal Computer is displayed through user-defined menus.

At multiuser locations, graphics produced under Decision Display System reportedly can be transmitted to several Personal Computers at once. Each graph downloaded is priced between \$5 and \$20, depend-ing on its size and complexity.

National Data, One National Data Plaza, Corporate Square, Atlanta, Ga. 30329.

# Breaking IBM's Commandments

In the beginning, IBM told you not to configure host com puters more than 400 feet apart. The common way around that restriction was to use communications controllers and telephone lines. But you immediately sacrificed the data transfer speed—reducing it to less than 1% the native speed of the computer channel

#### Data Switch Ends IBM's Channel Length Restrictions

Data Switch's new ChannelNet products emulate and extend the IBM channel using fiber optic technology. With ChannelNet you can link mainframes at distances up to 3.4 miles, bypass communications control units, and still 5.4 miles. Oppose communications controlling, and suppose maintain full channel speeds. This means increased total system throughput and dramatic response time improvements. And ChannelNet requires no software changes to your operating system, applications software, and access methods.

#### ChannelNet Overcomes the Constraints You've Always Lived With in the IBM Environment

- Is the security of your database an important issue? Do you have equipment redundancies that could be eliminated by the ability to extend the channel?
- Are your space requirements, both in your physical plant and under your computer floor, at odds with your needs
- for additional equipment and cabling? Would you like to reduce the complexity of host-to-host links over distance without sacrificing the data transfer
- speed or transparency?

   Do you need tools to provide more control over your com-

puting environment? ChannelNet alone answers these challenges.

#### **Faster Access to Applications**

Do you want to improve user response time? Channel Net lets users access applications on multiple distributed con puters as if those applications were running on the local computer. In fact, performance improvements of several hundred percent have been recorded. That's performance.

#### Very-High-Speed Bulk Data Transfer and Security Backup

Could you benefit from accelerating bulk data transfers or database backup to 30 times the speed allowed by communications controllers? ChannelNet lets you transfer data as many times a day as your business demands, without tying up valuable resources or losing computing time.



Central Control of Your Extended Environment

Channel extension raises new issues of management and control. To meet these requirements Data Switch provides an integrated system that helps you reconfigure, test, monitor, and back up your computer resources from one central point of control. Now you can control physically distributed resources as if they were one logical data center

#### Come See the Light

For the first time, with ChannelNet, you can structure your computer resources around your organization's needs instead of building your organization around your computer equipment.

Need proof? See our revolutionary new system in action.

Come to the Data Switch booth at Interface in Atlanta, March 4-7. Or call and ask about our users' experiences

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#### **ON-LINE DATA BASES**

Compuserve, Inc., the videotext information and communication service provider, has announced the electronic mail feature of its **Consumer Information Service has** been upgraded and simplified.

A spokesman said the upgraded system, called Easyplex, replaces Compuserve's Email service. Features of Easyplex include an address book with the names and user ID numbers of up to 50 persons; menu, prompt and command modes for various operating speeds and functions; automatic numbering of lines; and on-line instructions within each

menu area.
Other features includes two methods of retrieving mail from other subscribers and numbering of incoming messages.

Subscription fees for Consumer Information Service include a one-time charge of \$39.95, and connect charges at 300 bit/sec of \$12.50/hr. in prime time and \$6 per hour on evenings, weekends and holidays.

Compuserve, P.O. Box 20212, 5000 Arlington Centre Blvd., Columbus, Ohio 43220.

See ON-LINE page 95

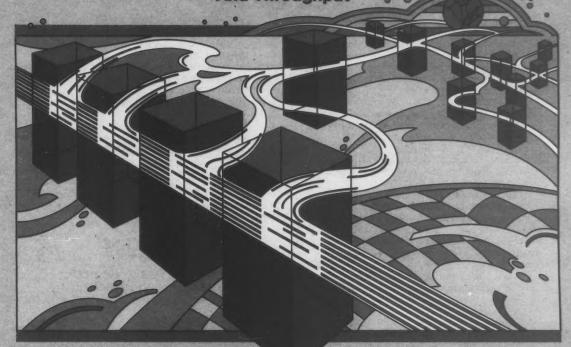


'And another thing. It'll never come into your office and ask for a raise.

#### **Fault Tolerant Networking**

**Increase Speed And Throughput** 





High-speed data centers with many host interfaces or high throughput requirements need networks that provide MORE POWER AND AVAILABILITY.

Now. TYMNET'S MULTI-PROCESSOR (MP) nodes coupled with their AUTOMATIC PORT SWITCH SYSTEM (APSS) provide just that network.

By using this new hardware and software architecture, TYMNET now provides increased power through multiple processors functioning as a single network node. When MP is combined with APSS, both FAULT TOLER-ANCE and THROUGHPUT are enhanced.

TYMNET Multi-Processors are connected by high-speed ETHERNET links that enable TYMNET MP's and your other ETHERNET devices to share cables.

TYMNET's advanced networking technology solves the problems of redundancy. increased power needs, and compatibility in large data systems.

Installation is non-disruptive, and the system is configured for easy expandability. MP/APSS is backed by TYMNET's EXPERIENCE AND WORLD WIDE SUPPORT.

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Private and Public Data Networks

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# When all else

Most diskettes are pretty good. And some of the time that's good enough.

But next time you throw away one that won't format or you lose the cash flow analysis you've been working on for weeks, make a mental note to try a box of Dysan diskettes.

They're better.

So much better, in fact, that major computer manufacturers put their names on our diskettes and sell them as their own.

Without fear of failure.

You see, we make our diskettes better with advanced manufacturing processes that our competitors have yet to figure out.

And we test them.

Almost to the point of absurdity.

Dysan diskettes are inspected almost a hundred times as they come down the line. They're tested to performance levels way beyond industry standards. And each one is certified to be 100 percent error free.

Then our corporate quality assurance fanatics come along and check them all over again. For all

the same things. Plus some things only they understand.

When we're done, you get exactly what you wanted in the first place. Diskettes that will record and retain all your data all the time.

We don't expect you to keep all that in your mental note, but we would like you to remember your last diskette failure.

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Somebody has to be better than everybody else.

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#### ON-LINE from page 92

Trans World Airlines, Inc. (TWA) and Compuserve, Inc. have announced that TWA's Pars reservations system is now available via Compuserve's Information Service.

The program, called Travelshopper, allows Compuserve subscribers access to TWA's reservations systems via a microcomputer. The user can determine the lowest fares and can make a reservation. Tickets are either issued by a travel agency, sent to the individual's home or to the airline ticket counter.

line ticket counter.

A subscription to Compuserve's Information Service is priced at \$39.95; standard connect charges are \$12.50/hour during prime time (8 a.m. to 6 p.m. weekdays) and \$6/hour in non-prime time. Subscribers

to Travelshopper must pay an additional \$20/hour during prime time and \$15/hour during non-prime time. Compuserve, P.O. Box 20212, 5000

Compuserve, P.O. Box 20212, 5000 Arlington Centre Blvd., Columbus, Ohio 43220.

#### **METHODOLOGIES**

Massociated Design Technology Ltd. has introduced Process Architecture Design Technique (Padtech), a system design methodology for automating business processes.

Padtech reportedly works on the University of California at Berkeley 4.2 Unix-based multiple-screen workstutions with local data base capabilities connected to data base servers on Ethernet local-area networks.

The product includes activity dia-

grams that map business activities and communications for establishing contexts for process design. Concept diagrams define process communications to establish logical data base design. Event diagrams specify control structure for operational process for a business activity.

Padtech is priced at \$25,000.

Padtech is priced at \$25,000. Associative Design Technology, P.O. Box 518, 142 Brigham Hill Road, N. Grafton, Mass. 01536.

#### TRAINING

■ Comshare, Inc. has announced a microcomputer-based training package for information centers that use IBM's VM operating system with CMS.

The courseware runs on the IBM

Personal Computer, Personal Computer XT and 3270 Personal Computer. The basic configuration required is the micro with a 64K-byte memory, single disk drive, color or monochrome monitor, Microsoft Corp.'s MS/DOS 1.1, 2.0 or 2.1 and a videotape player (½-in., ¾-in. or Beta format) with color monitor.

The "Introduction to VM/CMS for Information Center End Users" courseware provides instruction, tests and practical exercises on the basic segments of the VM/CMS system and editor. The course takes six to 10 hours and consists of more than 2,000 color graphics screens.

The price of the courseware is \$3,000, which includes three diskettes, 10 course guides, one administrator's guide and a videotape.

Comshare, 3001 S. State St., Ann

Comshare, 3001 S. State St., Ann Arbor, Mich. 48106.

#### SUPPORT from page 71

dates and enhancements or installing tools like microfiche, aimed at reducing paperwork, he said. Some of the company's older accounting applications cannot be maintained because they are poorly documented and could be jeopardized by maintenance, Miller said.



Because of the amount of maintenance undertaken by the company, enhancements to some existing programs are pushed aside for new applications and revisions to more critical

existing systems.

One thing that may ease maintenance problems, according to Miller, is the use of programming aids that generate documentation as changes are made to the code. Union Oil is in the process of evaluating these products, he said. Another obvious solution is an improved development cycle, Miller noted.

At Creative Automation Co. in Hillside, Ill., software maintenance problems are minimized through careful applications planning and design, said Doug Hofbauer, vice-president of systems and software.

Programs developed at the direct

Programs developed at the direct mail service bureau have a longer life span than most other applications, he said. Hofbauer attributes that success to meticulous program design. That planning process can take up to two months, which may mean making users wait for their applications, he noted.

But that in-depth planning is well worth it, as a reduced maintenance work load is crucial for Creative Automation's limited staff.

#### AMDAHL from page 71

mance of operating systems running as guests under VM.

Like the VM Migration Aid, MDF also permits more than one control program to coexist in a single CPU, although the Amdahl product, unlike its IBM counterpart, is implemented in hardware rather than software [CW, Dec. 3].

But whereas the VM Migration Aid consumes 8% to 16% of a main-frame's available processing resources, MDF requires only about 5%. The difference in overhead requirements persuaded Amdahl to maintain support for its own product rather than for the VM/XA System Facility.

# EasyPROCLIB gave me an extra half day a week! \*



EasyPROCLIB is a unique operating system enhancement that proves that you can please all of the people all of the time.

If you're in charge of your data center's procedure library, it works for you by taking the responsibility for maintaining, controlling and repairing the system PROCLIBs off your shoulders, freeing up time to get other work done.

#### "We have over 500 users. It would be a nightmare to manage without EasyPROCLIB."\*

Users like it because it gives them control of their own PROCLIBs, and they can modify them any time without involving the systems staff.

And data center management likes it because it increases overall productivity. If a user crashes his private library, it doesn't affect the system or other users. An EasyPROCLIB diagnostic message notifies the user, and he is responsible for repairing or restoring it.

#### "What would I do if they told me I had to give up EasyPROCLIB? I'd fight them:"\*

There's no limit to the number of procedure libraries that may be established with EasyPROCLIB. There can be a private procedure library for each department, each development group, each programmer-for as many different divisions as you need. This means that you don't have to worry about deciding whether a procedure should be included in the installation's procedure library – and users don't have to try to accomplish specific applications using less efficient general purpose procedures.

Because EasyPROCLIB is completely transparent, many users don't know that they have it. But the data center management and staff knowbecause it simplifies their job, cutting down housekeeping time and giving them more time to manage. Since it was introduced six years ago, EasyPROCLIB has been installed at hundreds of IBM MVS sites, and wherever it's been installed, it's still at work.

#### "We'll give you thirty days to see what EasyPROCLIB can do for you.

You can try EasyPROCLIB in your own facility for thirty days on us. Installation takes about an hour of system programmer time and fifteen minutes of machine time.

For more information or to set up your free thirty-day trial, call today. 1-800-368-7638

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Software Corporation of America

\*Comments from interviews with EasyPROCLIB users
\*\*Comment from Software Corporation of America.
EasyPROCLIB (for IBM, MVS/XA, MVS, SVS, VSI, MVT)



#### UPKEEP from page 71

ment cost of roughly \$25 per line of code. But that figure alone does not speak to the strategic value of the corporate software asset.

corporate software asset.

"Software is clearly an asset,"
Kluge said. "That asset must be protected and enhanced just like the traditional assets of plant and equipment. We have to understand the importance and the impact of the software we protect. Programmers have great power in an organization today. They can really affect whether or not a business goes forward in meeting its goals."

Protecting — or maintaining — software is Kluge's specialty. The Catalyst Group offers the Structured Retrofit service [CW, Jan. 28], which can transform a company's older Cobol programs into efficient, structured code.

Kluge said the Catalyst Group has analyzed more than 100 million lines of code in some 100,000 programs maintained by more than 100 companies. More than 30% of the code the group has worked with has been

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Software...must be protected and enhanced just like the traditional assets of plant and equipment.

--- Mary Kay Kluge, Peat, Marwick, Mitchell & Co.

poorly structured, overly complex and difficult to maintain.

Speaking during a session on maintenance chaired by Nicholas Zvegintzov, editor of Software Maintenance News, at the recent Info/Software conference in Chicago, Kluge said her work with other companies has shown that most in-house software groups currently allocate less than 20% of resources — money and manpower — to new software development. Only about 20% of the remaining portion targeted to maintenance is spent correcting actual program errors or bugs. The remainder is devoted to enhancing the system with new features and functions or adapting the software to a different hardware environment.

#### Standards needed

Considering the vast resources most organizations currently allocate to software maintenance, Kluge said, some standards are needed to measure the quality of the software being maintained.

"Excellent software meets an organization's business and technical needs. It satisfies user requirements, and it is functional, accurate and accommodates change," Kluge said. "But how do you measure quality? How do you pinpoint problems in software?"

The answer, Kluge said, is software metrics. She described software metrics as a set of quantitative measures by which an organization can assess such characteristics as the architecture and complexity of software. Among the metrics the Catalyst Group utilizes to measure the complexity of a program are the following:

lowing:

The levels of nesting, the inclu-

sion of subroutines within larger routines, in a program.

The number of program verbs.
The percentage of control verbs in a program. If more than 35% of program verbs are control verbs, Kluge said, the program may contain too many functions and may

be too complex.

The group's metrics for measuring system architecture, the actual paragraph-to-paragraph structure of a program, include the following:

gram, include the following:

The number of GO TO statements in a program.

The number of "perform" verbs in a program. Kluge said perform verbs support program modularity.

The number of "alter" verbs,

The number of "alter" verbs, which she said obscure the control flow in a program.

To measure the diagnostics — the

ease with which program reliability problems can be pinpointed — Kluge's Catalyst Group quantifies the amount of unexecutable or dead code within a program, runaway or open-ended logic paths and the levels of recursion — the repetition of operations.

Using the quantitative results of such program analysis, Kluge said a manager can compare the relative quality of applications and decide where best to allocate maintenance resources. Software metrics

also allows a manager to assign experienced staff members to more significant problem areas and helps to identify software problems before they become critical.

In addition, the quantitative results can be presented in chart or graphics format and measured over time. The use of software metrics can also help a software professional better manage programmers. It allows the manager to define and measure compliance with programming standards, provides some objective criteria for evaluating a programmer's performance and supplies a method for measuring improvements in the quality of existing systems over time.

"If we can start to measure the quality of our code, we can better attack the problem of maintenance today," Kluge said. "Software metrics is the key to controlling maintenance.' You can identify your worst problems, allocate resources, ensure conformance to standards and deal more effectively with management by helping them understand the problem. It gives us the tools to control the management of the corporate software asset."

# Data Check Recovery saved us \$50,000 in billings in two seconds."



Gary Zollweg, Mgr., Worldwide Networking Project, National Semiconductor Corporation, Sunnyvale, CA

"We bought DCR in the first half of 1983 to deal with the moderately large numbers of soft I/O errors we'd been having with our 140-odd disk packs.

"We bill users for the time they use, based on SMF data. In one case, DCR let us recover SMF data representing \$50,000 in billings. It only took a few seconds, but in that one use, DCR paid for itself. And we still get other benefits.

"Data Check Recovery probably buys us two or three hours a week of programmer time that would otherwise be spent in reconstruction and recovery.

"It also puts us in a stronger position in dealing with vendors. Data Check Recovery helps us analyze our records to pinpoint where the source of the problem is. When we talk to the vendor, we have ammunition.

"Data Check Recovery is so inexpensive that we can afford to ignore it and leave it on the shelf until we need it. All it takes is one use, and it pays for itself.

"We're convinced.
We're installing it at all DP locations worldwide."

Data Check Recovery is a powerful, dependable utility that recovers data that has become unreadable due to permanent I/O errors – hard data checks, track overruns and several types of equipment checks. Data Check Recovery supports all OS operating systems.

For more information about how DCR can keep permanent I/O errors from turning into permanent disasters, call Software Corporation of America toll-free at 800/368-7638. In Virginia, call 703/47I-1545.

456 Carlisle Drive Herndon, VA 22070 (703) 471-1545

Software Corporation of America

#### UCCEL from page 71

the development of human interfaces that will make it easier for end users to use the systems."

The second prong of Uccel's software strategy is intended to bring the company squarely into the rapidly emerging applications development tools market. Newton said Uccel's development aids are slated for introduction in 1986 and, although they will address code generation, will be primarily aimed at automating the design phase of the applications development life cycle.

Newton said the applications development tools will be a natural outgrowth of Uccel's \$20 million Leap, the multiyear project structured as a separate division of the company.

separate division of the company. Leap has been charged with three tasks. The first task is that the project is intended to produce a highly integrated set of banking and horizontal market accounting applications for IBM mainframes. It is also geared toward defining an applications development methodology and, finally, it was designed to address improvements in the support of Uccel's products.

#### Banking applications primary focus

Although banking applications are the primary focus for Leap — and the third prong of Uccel's strategy — the project will have little impact on Uccel's existing 20-module Infopoint banking system, which the company's applications software division will continue to maintain and enhance. Actual Leap-related products, which will include traditional banking applications and a variety of banking-industry-specific decision

support tools, will not reach the market until about mid-1986, Newton said.

Uccel is no newcomer to applications, having marketed accounts payable and receivable, fixed assets and general ledger products, among others. So why the major thrust into

banking applications?

"It has to do with the competitive situation within banking," Newton said. "We think some of the leading players, such as [Anacomp, Inc.] and [Hogan Systems, Inc.], have had such severe setbacks that we now have a window to be a really dominant player in the banking industry. We feel we have a chance to dominate a particular market segment, the mediumand large-scale domestic banks."

But while Leap and the push into banking may be stealing much of the limelight at Uccel these days, company executives like Newton have not forgotten Uccel's system software roots.

"If you asked the industry consultants five years ago, they would have told you the applications market of today would be many times the size of the systems software market," Newton said. "Today, the same people are saying systems software has the same growth potential as applications over the next five years.

tions over the next five years.
"But systems software has some spectacular advantages," he continued. "I can go to an auto company in Japan, a distributor in Australia or a manufacturer in the U.S., and the systems software runs almost identically. Applications run into differences by geography, by language, by industry and other factors. Systems software is truly a market we can leverage."

## Realia COBOL. Migration without migraines.

Until recently, you had to abandon the business computer language when you developed micro-computer application software. The available micro COBOLs were inadequate—too limited, too slow. The best alternative—the XT/370 or AT/370 using IBM's COBOL—was very expensive and still too slow. To get acceptable performance, you had to retrain your programmers in Pascal or C.

#### Realia COBOL is the cure for such headaches.

Realia's compiler supports most IBM VS/COBOL and VS/COBOL II features, such as:

- COMP and COMP-3 data
- GOBACK, EJECT, and SKIP statements
- SELECT assignment names
- Structured programming extensions of
- Multiple entry points
- VS/COBOL II

You can download mainframe systems for development, maintenance, and testing. Productivity will soar.

You can compile faster with Realia COBOL than in most mainframe environments, even on floppy-based systems. Compile-time options allow cross-reference, brief and full code listings, and helpful features like subscript and decimal value checks.

Our interactive debugger lets you follow the program source, display and modify data, and set breakpoints using the normal optimized machine code.

#### The results are startling.

Our users report that their systems run up to 20 times faster when compiled by Realia COBOL. That's compared to our nearest micro competitor. The ratio is up to 100 times faster when compared to any of the others.

On the IBM PC AT, your programs can run at 370/148 to 370/158 speed. Realia's file system really makes your machine deliver, giving it a distinct edge over Pascal or C. Our indexed file system even has full key compression and buffer controls just like VSAM. The generated code is pure MS-DOS, so it can be run on most of the 8088/8086 machine family.

#### And you can sell your programs without paying us a royalty fee.

Realia COBOL is priced at \$995, including one year of maintenance and upgrades. Subsequent maintenance and upgrade contracts are currently priced at \$125/year/copy. Available for the IBM PC, PC XT, 3270 PC, PC AT, PC-compatibles, and the TANDY 2000.

#### Realia COBOL. What a relief.

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Professional Software for the Personal Computer



# Integrated tools get definition in marketplace

The term "integration" is something of a buzzword in the soft-ware industry of late, and offering an "integrated" set of applications has become the cornerstone of many a software company's marketing strategy.

many a software company's marketing strategy.
Paul Newton, senior vice-president of software products for Uccel Corp., said recently that his ballas-based software firm intends to develop a "highly integrated" set of banking applications through a \$20 million effort known as the Leading Edge Applications Project (Leap). But how does Newton define applications integration?

"There is clearly a difference between interfacing of applications and integration," Newton said. "In interfacing, you generally take programs and packages designed for individual functions and add some way to exchange

"But with integration, you have to start at the top and decide how logically to decompose the business enterprise into different functional components," he said. "You have to structure data by whether, it is truly used in multiple areas and whether it really should be in a centralized data base.

whether, it is truly used in multiple areas and whether it really should be in a centralized data base.

"For example, there is a lot of data that is exclusive to one area or department, and it may not need to be in a central data base. But you have to address integration during the design phase; it does not come from patching together existing things. It is a process definition rather than a technology definition."



#### COMMUNICATIONS

#### Belt-tightening time at AT&T



DATA STREAM

ompetition in the market for electronic network switches and longdistance telephone services, coupled with higher than expected costs for connecting to local telephone systems, threw off AT&T's revenue forecasts for 1984 by 14%, according to the company's first postdivestiture annual report.

AT&T's total operating revenue was \$33.2 billion, down \$5.5 billion from what the company projected in its 1983 Information Statement and Prospectus (IS&P), a document that was prepared to show investors how divestiture was expected to effect the company.

The company attributes the revenue slip (if it can be called such, even though the IS&P was based on expectations only) to two main factors: a shortfall in service revenue, which accounts for 47% of the company's total revenue; and softening demand for products manufactured by AT&T Technologies, the old Western Electric Co.

AT&T believes that sales of toll services grew marginally in 1984, but actual data shows that growth has been obscured by the migration from the old Bell System division-of-revenue process which AT&T and the now-divested Bell operating companies divided the monthly revenue earned for long-distance and local services provided — and by implementation of the new access charge billing, under which AT&T pays the local phone companies fixed fees for access to their networks

The growth in toll services was hin-dered in 1984, AT&T contended, by high local access charges (twice as high as its competitors pay, expenses that consume 60% of AT&T's gross long-distance revenue, the company maintained), increased competition in the long-distance market and an adverse regulatory environment. (AT&T said it is "the only long-distance company whose prices and service offerings are still fully regulated.")

#### IBM releases line adapter for System/36

ARMONK, N.Y. - IBM has announced a communications line adapter for the System/36 that enables that processor to support twice the number of remote lines previously supported.

The Eight-Line Communications Adapter (ECLA) replaces IBM's Multiline Communications Adapter (MCA) and supports bisynchronous, Synchronous Data Link Control (SDLC), High-Level Data Link Control and X.25 protocols over switched or nonswitched, public or private lines, IBM reported. Proper protocols are loaded at program execution time into the communications adapter microprocessor

The eight lines are said to support halfduplex, concurrent operations at speeds from 600 bit/sec to 19.2K bit/sec per line. One line may operate at speeds up to 57.6K bit/sec, and the maximum aggregate for all lines is 170K bit/sec.

Available options include an autocall adapter, consisting of a cable and inter-See IBM page 100

#### INSIDE

Voice/Data Communications/100

Local-Area Networks/101

#### Call-monitoring software slashes city's telephone bills

FORT COLLINS, Colo. — Less than two months after the city of Fort Collins installed software to monitor and manage its telephone costs, its Wats bill dropped 53%, and its direct-distance dialing bill dropped 33%.

In less than one year, these and other monthly savings allowed the city to recover its software investment, according to Peter Dallow, Fort Collins' director of information and communications sys-

Dallow said the software, Telephone Management and Accounting (TMA) from Telecommunication Software, Inc., afforded the city a 30% savings from what it would have paid had it relied on its former method of telephone cost accounting. The package cost the city \$20,000.

Until it got the software 11/2 years ago, Fort Collins relied on inexact budgeting and cost allocation procedures. Every year the city estimated what its total annual telephone bill would be based on the previous year's expenses and on projected rate changes. It then divided the total estimated bill by

the number of extensions in its phone system to determine how much it should charge various city agencies for each extension they used

Each extension cost the same amount, regard-



Allocating calls back to individual employees and departments has reduced the number of personal calls made on city extensions.

less of how often it was used, Dallow said. "That's not a very equitable way to distribute costs."

Fort Collins had a Northern Telecom, Inc. SO1 private branch exchange (PBX) with a call detail recording feature. But city employees made ap-

proximately 50,000 calls a month, Dallow said, and the recording tool provided only raw data on each call, rather than formatted reports the city could use to help manage its phone system.

Rising costs were another factor in the city's search for telephone management software. With the breakup of the Bell system, Dallow said, "We were concerned with the costs of the phone system going up." He had received predictions that local rates might increase by as much as 100%

Fort Collins looked for software that would provide the following:

An equitable procedure to allocate telephone costs back to each department.

 A method of knowing who made each longdistance call, and how much it cost.

A method of auditing the monthly telephone bill to prevent overcharging.

A way to analyze the performance of the telephone system to provide the most cost-effective configuration long-distance of services.

See COSTS page 100

#### **Group seeks to stimulate MIS** issue debate via bulletin board

**HOUSTON** — Information systems executives from 10 companies have reportedly joined a bulletin board and telecommunications network established by the American Productivity Center, a nonprofit productivity measurement organization here.

Firms said to be represented on the Information Resource Manage-ment Computer Network (IRMCN) include Brunswick Corp., Lever Brothers Co., Northrup Corp., Sears, Roebuck & Co. and Texas Instruments, Inc. Among the topics to be discussed on the network are data base security, artificial intelligence and the future of information systems, an American Productivity Center spokeswoman said.

The network members use the GTE Telenet Communications Corp. network to connect with the bulletin board, which resides on the Electronic Information Exchange System of the New Jersey Institute of Technol-

ogy.

Membership in the IRMCN, including Telenet network services fees, is priced at \$4,400 per year for American Productivity Center members and \$5,000 for nonmembers. The American Productivity Center is located at 123 N. Post Oak Lane, Houston, Texas 77024.

#### Tandem offers interface option for 6100 front-end processors

CUPERTINO, Calif. — Tandem Computers, Inc. has enhanced its 6100 front-end communications processor by adding a line interface unit, the LIU4, that, according to the vendor, reduces connection costs for asynchronous point-to-point terminals by 75%.

According to a vendor spokesman, the LIU4, a plug-in hardware option, supports up to four asynchronous devices, such as Tandem 6530 series terminals, at no additional cost,

Reportedly, up to 45 LIU4s can be installed in a 6100 cabinet, supporting 180 local or remote asynchronous

Typical applications of the LIU4 include credit authorization, hom banking and shop floor control, the vendor said.

The 6100 Communication Subsystem allows Tandem systems to monitor several hundred communications lines at one time, the vendor said. The product is microprogrammable and allows different protocols, lines and line speeds to be mixed in one

LIU4 costs \$1,940. It requires Tandem's ATP6100 host software, which

costs \$500 per processor.

Tandem is located at 19333 Vallco Pkwy., Cupertino, Calif. 95014.

#### COMMUNICATIONS

#### COSTS from page 99

The TMA software the city chose is a Cobol program that runs on Fort Collins' 2Mbyte Sperry Corp. 90/40. It matches information from the city's PBX call detail records against bills from Mountain Bell Telephone Co., its local phone company. The phone company sends Fort Collins its monthly phone bills on magnetic tape, and a tape drive hooked to the PBX captures information from the call detail recorder on a separate tape.

When the tapes are run against the software on the 90/40, the system generates three categories of reports Dallow uses to bill user departments, to find incorrect charges and to check the efficiency of the city's telecommunications system.

Detail reports show all local and long-distance calls formatted by originating extension and by department. Dallow said these reports provide an accurate and equitable way of charging each department for telephone usage.

Maddit reports compare phone bills with data from Fort Collins' PBX call detail recordings and show billing errors

**■** Utilization reports show which calls are not being routed over the least-cost trunk group and where calls are routed when the least-cost group is not used. They also record what kind of calls employees make most often, so the city can determine how best to use low-cost services such as Wats and for-eign exchange, Dallow said.

Allocating calls back to individual employees and de-partments has reduced the number of personal long-distance calls made on city ex-tensions, Dallow said. He attributed the reduction to the city's "letting employees know that we had a way to track all these telephone calls."

The audit reports have saved the city from paying for calls it did not make, and the utilization reports have helped it decide what kind of services to use. In one case, the reports indicated that Fort Collins should maintain its Wats service rather than switch to service from MCI Communications Corp. cause of the way the city's phone use was distributed.

Dallow said he prefers his software-based call accounting to other options. The city looked at accounting services provided by major telephone companies, but these required investments in microcomputer hardware that Fort Collins did not want to make.

The phone companies' systems rely on micros to cap-ture data from PBX call detail recording and run that information against tarriffs. This procedure allows users to estimate their phone bills.

IBM from page 99

face, that allows a 600 bit/ sec to 1.2K bit/sec modem to be attached to a System/36.

An X.21 adapter provides an interface to either a switched or a nonswitched X.21 interface device, which is used between data terminal and data terminating devices. On switched networks. transmission speeds from 2.4K bit/sec to 4.8K bit/sec supported. On nonare switched nets, transmission speeds range from 2.4K bit/ sec to 4.8K bit/sec for pointto-point operations and 2.4K bit/sec to 9.6K bit/sec for multipoint operations.

A digital data service adapter supports bisynchronous or SDLC protocols at speeds of 2.4K bit/sec to 56K bit/sec over AT&T's Dataphone Digital Services net.

ECLA costs \$2,000. Each adapter option costs \$1,500. IBM is located at Old Or-

chard Road, Armonk, N.Y.

#### VOICE/DATA COMMUNICATIONS

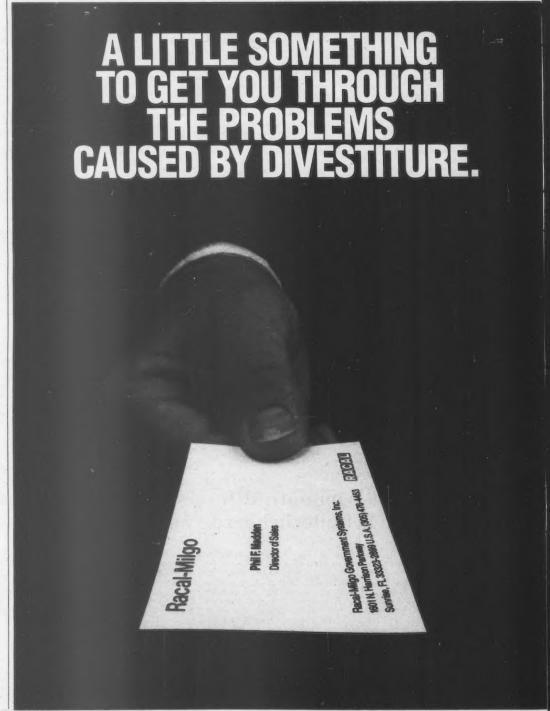
Comstat Telesystems, Inc. has introduced TCS-9000, a portable satellite earth station designed for use by mineral exploration teams, tactical units and emergency response teams.

A vendor spokesman said product weighs 70 pounds, uses 385W of power and is housed in two carrying cases. It is equipped with a compass and a lookup table. enabling users to set up the terminal and connect it to the Inmarsat network of communication satellites in 15 min-

TCS-9000 provides longdistance telephone service and telex and data communications to any place in the world, the vendor reported.

TCS-9000 is priced at \$35,200.

Telesystems, 2721 Prosperity Ave., Fairfax, Va.



#### COMMUNICATIONS

#### LOCAL-AREA NETWORKS

Codex Corp. has added the Codex 4110 Muxport Gateway to its Codex 4000 series local-area network.

The company also announced a series of enhance-ments provided by Unger-mann-Bass, Inc., the OEM for the Codex 4000 local-area network.

The gateway option allows internetworking of local- and wide-area network resources. The option makes possible micro-to-mainframe, terminal-to-host and termi-nal-to-terminal communica-tions between Codex's 4000 series local-area network and wide-area networks such as Codex' 6000 Intelligent Network Processor, Codex said.

The product comprises a Codex 6002 Intelligent Network Processor and a Codex 4000 series Entryway and serves six to 16 ports.

The Ungermann-Bass en-

hancements consist of two micro entryways; software packages Disktalk and Printtalk, which allow microcomputers to share disks and printers; a local-area network manager; a radio frequency modem card: and a new release of the network operating system software.

The network processor costs between \$3,300 and \$3,600, and Entryway costs approximately \$450/port.

Codex, 20 Cabot Blvd.,
Mansfield, Mass. 02048

AT&T from page 99

Growth or no growth, services are still the company's cash cow, a fact accentuated by the trouble AT&T has had selling communications switching equipment, which accounts for 31% of total revenue. "AT&T Technologies' net income declined sharply during 1983 and 1982, principally due to diminished sales volumes and to costs associated with reorganization and consolidation

of manufacturing, distribu-tion and repair facilities," the annual report said.

AT&T blames the slowdown in equipment sales on the influx of foreign manufactured products and product delivery delays due to the component shortages, in cluding silicon chips.

But the company's problems go beyond external market forces, as Charles L. Brown, AT&T's chairman of the board, conceded in his analysis of 1984. "One of the principal adjustments we have had to make is to lower our cost structure and improve our margins. We had to come to grips with the fact that not all of the work done when we were 'the telephone company' has a place in this new business environment and that we could operate with a much smaller management force.

Evidence of the fat can be found on the balance sheet. AT&T's net income on 1984 revenue of \$33.2 billion was a paltry \$1.4 billion. By way of comparison, Bell South, which is the holding company for the divested Bell operating companies Southern Bell Telegraph and Telephone Co. and South Central Bell Telephone Co., made \$1.26 billion on 1984 revenues of \$9.52 billion.

There is also evidence that the company is trying to cut it expenses. Brown said, "Jobs have been eliminated through attrition, voluntary and involuntary retirements and lavoffs. Four of our manufacturing plants are in the process of being closed. Salary structures are frozen through 1985 for all management employees.

The belt-cinching comes in the face of unprecedented competition, perhaps simply because of it. Research organizations report that, in terms of lines shipped, Northern Telecom, Inc. shipped more private branch exchanges (PBX) in 1984 than AT&T, a watershed given PBXs are one of AT&T staple products.

#### The rest of the story

But AT&T's low shipment 1984 numbers do not tell the whole story

Demand for AT&T PBXs is believed to be high, although the extent of the demand is obscured by delivery delays. The industry has warmed to the high-end System 85 and enthusiastically embraced the low- to mid-range System

Conspicuously absent in AT&T's annual report was any discussion of Net 1000, its beleaguered processing services network. One has to wonder if the service can survive the fat-trimming needed to make the company competitive in the other markets into which it is venturing.

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#### **SYSTEMS & PERIPHERALS**

SHOP TALK/KENNETH G. BRILL

#### Audit confirms backup systems

or data centers with high uptime requirements, just having a disaster recovery plan is not good enough. Management should periodically audit the computer life support systems to confirm that each piece of equipment will operate in an emergency.

These computer room life support systems include air conditioning, humidity control, power conditioners or uninteruptable power supplies (UPS), power distribution units, grounding, physical security and fire suppression systems. Too often, management learns of problems with one or more of these support systems only after a failure has affected computer uptime.

After investing money in a UPS or

Brill is president of Computersite Engineering, an engineering and consulting firm in Cambridge, Mass. other types of sophisticated protection hardware, many managers develop a false sense of security. Often, DP executives are surprised to discover, in a support systems audit, that there are serious problems that could affect system reliability.

There are at least five problems that are typically discovered as a result of a support system audit. These include the following:

Improper reliability engineering in the original facility design.

■ Incompatibilities between conditioning systems.

Improper equipment installation.
 Lack of regular maintenance.

Failure to test backup systems.

Operating personnel will often know of design, equipment or maintenance deficiencies, but the chain of command is so cumbersome that their concerns or

See UPS page 108

#### IBM drops fees for additional use in rentals

Plan A affected

RYE BROOK, N.Y. — IBM has discontinued the additional use charges on selected machines leased under its Rental Plan A. The change went into effect Feb. 25.

The change means customers will no longer be required to submit to IBM billable time authorization forms and maintenance logs for month-ending meter readings on machines leased under Plan A

ings on machines leased under Plan A.
Previously, users had to pay an additional charge when they used the hardware for more than 176 hours per month.
All affected Plan A machines have been redesignated Plan B machines, which means that users now have unlimited use of the machines in any month. The change does does not affect IBM users involved with rental Plan C or E contracts, the vendor said.

The following machines are affected: The 1131 CPU; 1133 multiplex control enclosure; 1255 magnetic character reader; 1287 optical reader; 1288 optical reader; 1403 printer; 1419 magnetic character reader; 1442 card read punch; 1443 print-2020 and 2022 CPUs; 2203 printer; 2305 fixed-head storage device; 2310 disk drive; 2401 magnetic tape unit; 2415 magnetic tape unit and controller; 2501 card reader; 2520 card read punch; 2540 card read punch; 2560 multifunction card machine; 2671 paper tape reader; 2701 data adapter unit; 2715 transmission control unit; 2821 control unit; 2822 paper tape reader controller; 2826 paper tape controller; 2835 storage control unit; 2860 selector channel unit; 2927 RPQ tape control unit; 3046 power unit; 3047 power unit; 3115 and 3125 CPUs; 3203 printer; 3211 printer; 3410 magnetic tape unit; 3411 magnetic tape control unit; 3420 magnetic tape unit; 3505 card reader; 3525 card punch; 3540 diskette I/O unit; 3704, 3705 and 3706 communications controllers 3803 magnetic tape control unit; 3811 See RENT page 108

Martin Marietta Data Systems,
Inc. announced
the Orlando 400
time-sharing service, which enables use of the
vendor's software
on a specialized
off-site hardware
configuration/105

INSIDE

Printers/Plotters/105

# LPGA system aces major task of organizing golf tournament

RANCHO MIRAGE, Calif. — It takes more than a scorecard and sharp pencil to put on a major golf tournament these days. Sponsors of the Nabisco Brands, Inc./Dinah Shore Ladies Professional Golf Association (LPGA) Tournament are relying on a series of systems to track the myriad details involved — from keeping ticket records and registration to inventory and badge control.

With nationwide television coverage, prize money of \$400,000 and gate receipts from an expected 80,000 people, the Nabisco/Dinah Shore tournament, held each year at the Mission Hills Country Club here, is big business, noted Leslie Langdon, data base coordinator.

The tournament office staff of two fulltime year-round people and two part-time employees, located in offices just off the golf course, is responsible for close to 800 invited guests that include staff, Nabisco personnel, representatives from Nabisco's subsidiaries around the world and the players, Langdon said. Nabisco has sponsored the tournament since 1982.

Richard W. Brightman, project leader at the Nabisco headquarters in Parsippany, N.J., is in charge of all the Nabisco/Dinah Shore tournament's data processing. His task is to analyze needs and develop programs that will produce a more efficient operation, he said.

Nabisco selected a Wang Laboratories, Inc. Office Information System (OIS) 105 with three workstations and a printer for the 1983 tournament, Brightman said. The

See GOLF page 106

### Cartridge tape unit debuts for DEC minis

COSTA MESA, Calif. — California Computer Group, Inc. (CCG) has introduced 200 in./sec, 500M-byte and 300M-byte cartridge streamer tape subsystems for Digital Equipment Corp. minicomputers.

The MT-500H subsystem is said to back up a 500M-byte disk in 36 minutes. The rack-mountable MT-500H (500M-byte) and MT-300H (300M-byte) magnetic tape transports were designed specifically to back up Control Data Corp. 9715 and 9710 disk drives and similar 9-in. Winchester disk drives

Users may choose either the 200 in./sec streaming mode for a mirror-image backup or the 50 in./sec start/stop mode for file-oriented backup. CCG uses Emulex Corp.'s TC02, TC12 and TC7000 tape couplers to interface with DEC minis.

The subsystem prices start at \$8,000 and include drive, controller and cables.

CCG is located at Suite G-10, 3303 Harbor Blvd., Costa Mesa, Calif. 92626.

#### Deciphering industry 'acrospeak'



ne of the hazards of reporting about the computer industry is frequent encounters with alien acronyms.

They come in many forms, shapes and sizes—all equally unrecognizable. Vendors thrust their-capital letters at us demanding attention, not realizing that some people have trouble remembering what it was that E.T. stood for.

I've hated acronyms ever since I could not recall that Fortran stood for formula translator on a mid-term exam.

Still, some are not as bad as others

I/O is useful, and VM has a nice ring to it. If you close your eyes and think about it, which not

many people have ever done, you can imagine VM being the sound a child makes on a rainy day or perhaps an avant-garde way of saying "very much."

But what is good in small quantities becomes a public nuisance when it gets out of hand.

Software companies of late have been on a rampage, breeding new acronyms faster than we can forget the old ones, combining them in out-of-wedlock unions.

Sometimes a particularly vigorous acronym will take on a life of its own. At a recent conference, the participants sat down to lunch discussing "dasdee" (spelled Dasd) instead of exhausting themselves pronouncing "Direct-Access Storage Device."

There are many perpetrators of this mania, but one of the biggest offenders is a company that has an obvious predilection for acronyms and is

See ACRONYM page 105

In the consumer loan department of a bank, collection potential is largely based upon operational efficiency. That's why Security Bank and Trust of Southgate, MI chose Davox, Davox integrated voice/data workstations helped Security Bank and Trust increase productivity significantly—without increasing staff.

without increasing staff.
With Davox, collectors spend more time collecting—instead of dialing and keying. The reason: Davox workstations feature 16 "Smart Buttons" that are pre-programmed to get the job done quickly and easily. A Smart Button automatically dials a number from an 85-entry telephone directory or a mainframe computer while other Smart Buttons permit the collector.

to access files, verify credit sources and update payment records—each with a single keystroke.

Davox workstations provide both 3270 (SNA/SDLC or BSC) and Async communications, (including CDC 752 Cyber Credit") so they are totally flexible, enhancing IBM mainframe and System/38 environments as well as existing PBX systems

as existing PBX systems.

And DavoxNet—our networking design that transmits voice and data simultaneously over existing twisted pair telephone lines—eliminates expensive coaxial wiring. DavoxNet networking power lets you share valuable resources—like printers, files, even IBM PCs.

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How we helped Security Bank and Trust unlock their collection potential.



#### SYSTEMS & PERIPHERALS

# Martin Marietta introduces mainframe time-sharing service

ORLANDO, Fla. — Martin Marietta Data Systems, Inc. has announced the Orlando 4000, a time-sharing service that offers users a specialized, localized hardware configuration plus the ability to use software packages developed by Martin Marietta.

The Orlando 4000 is said to offer users access to custom configurations of Martin Marietta's IBM or equivalent mainframes, software and communications capabilities. Specialized personnel support is also included.

The time-sharing service is said to provide applications packages, systems and microcomputer software packages, computing services and large-scale systems integration services, a spokeswoman said.

The service is said to relieve the financial, managerial and technical problems of running an in-house computer facility by configuring a processor complex that suits the user's needs at the Orlando 4000 building.

The service can be purchased in 12-hour increments and is said to be available 24 hours a day. Prices range from \$6,000/mo to \$172,000/mo.

The company's executive offices are located at 6801 Rockledge Drive, Bethesda, Md. 20817.

#### PRINTERS/PLOTTERS/ PERIPHERALS

■ Datasouth Computer Corp. has released its CX3180 medium-speed dot matrix printer, which emulates the IBM 3278 printer without the need for an outboard protocol converter.

The printer attaches directly to the IBM 3274/3276 (or compatible) cluster controller or 4331 display printer adapter via a standard IBM type A coaxial connector.

The CX3180 is said to deliver bidirectional printing at 180 char./sec. It supports IBM's Binary Synchronous Communications as well as Systems Network Architecture LU1 and LU3 data streams. The CX3180 features a Centronics Data Computer Corp.-compatible parallel interface.

The CX3180 costs \$3,195.

Datasouth Computer, 4216 Stuart
Andrew Blvd., Charlotte, N.C. 28210.

M A. B. Dick Co. has announced a graphics plotter that provides six pen stalls and color options for use with its Knowledge Worker desktop microcomputer.

The PP-2798 graphics plotter allows users to store and use pens of different widths. A view button allows users to eject the chart for review while plotting.

The plotter features a front control panel that provides for color tests before plotting and a paper guide for alignment of sheets or transparencies.

The price of the plotter is \$2,135.

A. B. Dick, 5700 W. Touhy Ave.,
Chicago, Ill. 60648.

#### ACRONYM from page 103

known by one — IBM.

Sometimes this tendency gets IBM in trouble.

When IBM wanted to develop the 360 mainframe, it called the project "Spread" for systems programming research, engineering and development. In the 1950s, when it first tried to develop a supercomputer, it called the project "Stretch." And in 1970, when it was concerned about halting inroads by competitors selling cheaper memory for its mainframes, it called the project "Smash," an acronym that took some explaining during the antitrust proceedings. Bob O. Evans, IBM's president of engineering, testified that he coined the word to mean IBM would "put this whole smash, all these products, out at one time."

#### Easier to speak Esperanto

Recently, IBM unleashed a blizzard of new acronyms through its stepped-up product announcements. It was not so bad when the PCjr made its debut, but what about Systems Network Architecture's DIA/DCA? I always found it easier to speak Esperanto and Inuit dialect than SQL/DS and Disoss.

The Boston-based Yankee Group market research firm tried to fight back against IBM's onslaught of acronyms by publishing its own acronym glossary that it handed out at a recent briefing session. But before the session ended, IBM had announced new disk drives, software and the Sierra series, making the list hopelessly outdated.

The Yankee Group — or YG, if you prefer — did perform one service, however. On the back of the list, it included alternative meanings for selected acronyms, meant in jest, but hinting at the irrationality of the multiple letters.

The following is a brief sampling from that list:

■ CMS, the Conversational Monitor System, was renamed the Conversational Madness Syndrome.

■ DB2, IBM's relational data base management system, was dubbed Doubtful Too?

■ A new ingredient in the alphabet soup, the SSCP, or System Service Control Point, part of SNA, was christened the System for Screwing-Up Competent Programmers.

■ Vsam became Very Simple Address Mutilation, and Btam became a piece of good advice: Better Try Again Monday.



#### SYSTEMS & PERIPHERALS

#### GOLF from page 103

company then purchased Wang's VS80 minicomputer for the 1984 tournament, along with two additional Wang workstations, a second impact printer and a new high-speed laser printer, he

Brightman uses the VS80's file management facilities to simulate a data base for managing the tournament, including ledger and record keeping, as well as automatic letter writing to guests and volunteers. The VS80 alsopermits accurate and current reporting, primarily through use of the report and data entry utilities, he said.

Brightman's first effort was to automate the collecwas to automate the collec-tion of advance ticket sales orders, he said. Ticket han-dling for the golf fans is the responsibility of Michelle Byer, the tournament administrator.

Ticket order brochures are mailed out in the early fall

and orders start coming in almost immediately, Langdon said. Pertinent information is recorded for each respon-dent, and confirmation letters and labels are printed on the system, she said. When the tickets are mailed three weeks before the tournament, copies of the confirma-tion letters are included. Meanwhile, the office has an updated list of collections and individuals to be billed. Badge control is another

of Byer's duties, Langdon

said. While some badges can be used during the entire week, others are for limited

attendance, she added.
On each day of the twoprofessional-amateur tournament preceding the main event, invited guests with different professionals and have their pic-tures taken, Langdon said. At least two pictures go to each guest. With addresses available through a label printout procedure, the mailing proce dure has been simplified and

speeded up, she said.
Planning the seating for the tournament's gala dinner presented even greater diffi-culties. "Who sits where is important. We can cross-check using a conflict analysis report to make sure that everyone has been assigned a seat and that no individual has been assigned to two or more tables," she said.

To form much of the data base information, Wendy Morton, the staff data entry person, inputs a list of all qualified professional golf-ers; information on whether they have their own caddies or will need one supplied; and the golf cart allocations for officials, staff, tourna-ment executives and volun-teers that are supplied by the LPGA, Langdon said.

Langdon expects to in-clude additional items in the inventory this summer, such as crowd control ropes, stakes, leaderboards, radios and other equipment required to keep the tourna-quired tournasaid. Such equipment is shared with other golf tour-naments, such as the Bob Hope Classic in January and the Vintage Invitational in March, she said, so it is important to keep track of it.

"One of our most critical functions on the system is the two-day pro-am pairing," Langdon adds. "This event involves 300 people. The pairings are handled by tournament executives, and it may take them days to work out the details. We now cross-reference the names and the individuals' handicaps when the acceptances come in. Then we can make sure we have each amateur paired one time per day."

Other applications included listing of invitees in categories such as celebrities, customers and executives, maintained in that order and alphabetically; and correspondence.

Correspondence not only includes the questionnaires that provide background and size data but also information for hostess groups, welcome and thank-you letters and their respective labels

for mailing. This guest information was kept on Nabisco's IBM corporate mainframe 1983," Brightman said. The move to a minicomputer in the office saved Nabisco \$40,000 in leased-line penses immediately, but the important benefit to Brightman is the timeliness of information. He is able to modify programs at Langdon's request on a Wang system in Parsippany and send the programs back to Ranch Mirage via Wang's Mailway system so that Langdon can be using the modified program in an hour, he said



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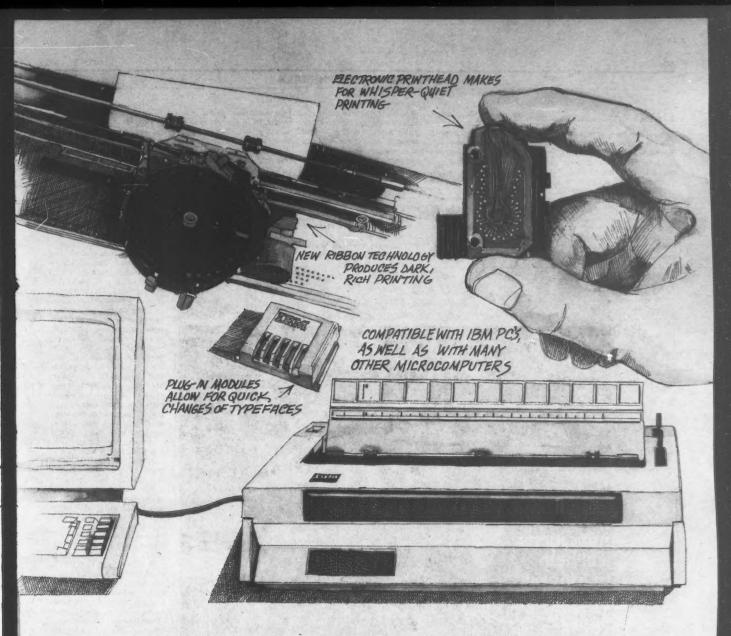
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#### SYSTEMS & PERIPHERALS

#### UPS from page 103

suggestions never reach top DP management until there is a disaster; then it is often too late. An audit can ensure that all levels know about existing technical problems.

For example, a common problem found during an environmental audit is poor air conditioning redundancy. Many sites have a single temperature control for the entire computer room. Without a backup unit, failure of the

temperature controller can force a system shutdown, and the system could remain down until a repair person arrives to fix the broken temperature control unit.

#### Improper electrical grounding

Consequently, even though a company has made a heavy investment in a UPS system and other sophisticated protection devices, the system can still fail as a result of faulty environmental controls. Air conditioning

systems, as well as other subsystems serving the computer room, should meet the same reliability standards as the computer systems they support.

Problems can often be found with Halon fire supression systems. One operations manager, for example, discovered the area under the floor near the Halon system had not been cleaned for some time. If the Halon system were ever activated, it could create a dust storm

that could damage disk drive media. In fact, there was a higher risk of disk damage resulting from an accidental discharge of the Halon system than the probability of a fire in the computer room.

Another common problem is improper electrical grounding. Independent, floating or isolated grounds that are not in compliance with the National Electrical Code carry a risk of damaging hardware. Furthermore, improper grounds pose a risk

to unprotected computer operators or technicians.

#### Cookbook approach

The root of many reliability problems in computer rooms stems from a cookbook approach to data center design. Despite good intentions, too many sites have been designed around the following recipe:

following recipe:
Install power distribution
modules, one UPS, five redundant air conditioners,
one raised floor and one fire
supression system. After installation, wait to see what
fails. Correct mistakes by
the incremental process of
trial and error.

trial and error.
Unfortunately, many environmental support product vendors encourage the cookbook approach by claiming their black boxes will solve a particular class of problems. Some of these vendors claim that the only engineering needed is to insert their product into the existing array of systems. This approach does not necessarily result in a high level of system uptime for the customer.

A computer system that truly has a high level of uninterrupted uptime usually involves 10 or more subsystems working in harmony. The weakest often determines overall reliability, so careful attention must be devoted to redundancy to ensure that computer operations continue even when failures occur in individual pieces of support equipment.

pleces of support equipment. A regular, rigorous testing program that simulates an emergency and then tests overall system performance under a full load is the best way to know that each piece of equipment will operate satisfactorily in an emergency. Such a program will often reveal engineering errors and equipment incompatibilities.

Such incompatibilities almost always exist, no matter how carefully a complex system is designed on paper. Many sites are afraid to conduct tests because any support equipment failure may jeopardize the computer system serving a live load. An environmental audit can identify the need for a testing program by determining how testing can be conducted off-line in ways that limit computer downtime risk.

#### RENT from page 103

printer control unit; 3830 storage control unit; 5098 RPQ printer control unit; 5408 CPU (System/3 Model 8); 5410 CPU (System/3 Model 10); 5412 and 5415 CPU; 5412 printer control unit; 5424 multifunction card unit; and the 5444 disk storage unit.

More information is available from IBM's Information Systems Group at 900 King St., Rye Brook, N.Y. 10573.



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#### **MICROCOMPUTERS**

#### Icon software environment offered for IBM PC Network

By Eric Bender CW Staff

REDWOOD CITY, Calif. -Torus Systems, Inc. has introduced Tapestry, an icon-based software environment for the

Scheduled for April 15 shipment, Tapes try is the first commercial software offering for the PC Network, Torus claimed. IBM began delivering PC Network hardware in October, but PC Network Program, the network operating system, was still

not available at press time.
Priced at \$400/network node, Tapestry replaces the PC Network Program and adds other capabilities, the vendor said. A version is also being offered for 3Com

Corp.'s Ethernet network hardware.

Tapestry is said to integrate file sharing, print sharing and electronic mail functions. It also offers telephone manage-ment, modem sharing, gateways and the ability to install an applications library, from which PC-DOS applications may be downloaded.

Network operations . are through one common user interface, with most choices presented to users through a series of icons, said Tim Sutton, Torus president. Network configuration and maintenance can be performed through the same interface, allowing nontechnical personnel to carry out those jobs, he said. See TAPESTRY page 118



# Macintosh-like

his week as the first pieces of the Macintosh Office begin to ship, more than a year after the Macintosh's debut, Apple Computer, Inc.'s star personal computer isn't selling in significant numbers to many large companies,

and it is far from a corporate machine.

Apple sells personal computers, not chunks of corporate resources that hap pen to sit on a desk, and that personalized approach is a major strength. But the approach has provided an excuse to ignore the gaps in Apple's product line
— gaps that corporate America doesn't

For example, here we have a billion-dollar-plus computer firm that doesn't offer a serious hard disk drive version of its high-end machine.

The Macintosh XL, the Lisa 2/10 in drag, is the result of a clumsy attempt to sell surplus machines designed for another operating system. Users said packages sometimes run faster on the Macintosh than on the Macintosh XL. If a start-up company like General Computer Corp. in Cambridge, Mass., can manufac-

Another case in point: All the recent hoopla about Applenet ignores the huge steps that must be taken to turn the bare bones, the point-to-point hardware, into a real local-area network with multiuser applications software, development tools, electronic mail and all the other

But whether the machine ever makes it in the Fortune 1,000 marketplace, the Macintosh is acting as a showpiece, a kind of icon for some next steps in enduser software. And some of those steps are leading back into the IBM Personal

See APPLE page 120

# software clicks

want to fill with third-party products.

ture a handy internal 10M-byte hard disk drive, why can't Apple?

features.

#### DG enhances laptop's screen

WESTBORO, Mass. — Responding to neerns about the readability of the concerns about the readability of screen on Data General Corp.'s Data General/One laptop portable, the firm has introduced a tilt-mounted version of that machine's LCD that reportedly increases

contrast and minimizes glare.

The new LCD may be adjusted to a variety of angles to offset the glare of workplace lighting, the company said. According to DG, the LCD also optimizes screen improving polarization, substantially character-to-screen contrast.

Available by mid-March, the display will be offered as a \$350 upgrade to existing versions of the DG/One and will be standard on new models. Upgrades will be done by either DG or its authorized dealers and will take 30 minutes, according to the vendor.

DG said DG/Ones still on dealers' shelves will be sold at a 10% discount, with the new display provided free to those buyers when it becomes available. The DG/One remains priced at \$2,895. DG's Desktop Division is located at 4400 Computer Divis Westbern Merc 01590.

Computer Drive, Westboro, Mass. 01580.

#### PFS versions available for HP Touchscreen line

MOUNTAIN VIEW, Calif. - Software Publishing Corp. has announced that versions of its PFS series of software products are now available for the Hewlett-Packard

Co. Touchscreen personal computers. The Touchscreen versions of PFS are said to include PFS:Write, PFS:File, PFS:Report and PFS:Graph. All of the packages are integrated at the data-sharing and command levels.

PFS:File reportedly allows users to store, retrieve, update and print information. PFS:Report is said to work with PFS:File to provide tabular summaries of the information in a file.

PFS:Write is a word processor, and PFS:Graph is a graphics package that allows users to create line, pie and bar

PFS:File and PFS:Report are offered bundled for the Touchscreen line at \$265. PFS:Write and PFS:Graph are each \$140.

Software Publishing is located at 1901 Landings Drive, Mountain View, Calif.



#### **MICROCOMPUTERS**

#### Cadkey boasts 3-D images

VERNON, Conn. — Micro Control Systems, Inc. has introduced its Cadkey software for creating three-dimensional computer-aided design (CAD) images on the IBM Personal Computer line, including the Personal Computer AT.

Under Cadkey, which costs \$1,895, 3-D parts reportedly can be converted to 2-D drawings that meet Ansi and international Standards Organization standards. Users can create an unlimited number of views of the 3-D part once they establish the original image.

Any change within the 3-D part causes all other views of the part to be updated automatically, according to the vendor. Cadkey also uses all English-language commands and prompts that can be selected from a menu by a digitizing tablet or by function keys.

In addition, all prompts and commands under Cadkey can be modified by users with most Personal Computer word processors, Micro Control Systems said. Users also are able to design their own menus and have access to immediate mode commands that can be accessed at any time from within another function. Users are thus able to change a system parameter or view a part differentially from within the original command.

Cadkey is said to feature deviceindependent plot files and to permit plotting from a separate Personal Computer.

Cadkey will support 640- by 420line resolution and 16 colors. The package requires a minimum of 512K bytes of internal memory.

Micro Control Systems is located at 27 Hartford Tnpk., Vernon, Conn. 06066

#### SPSS upgrades software

CHICAGO — SPSS, Inc. has unwrapped Release 1.1 of its SPSS/PC data analysis software, which expands the range of compatible microcomputers that will support the company's statistical analysis software.

The version makes the software compatible with the IBM Personal Computer AT 5170 Model 99 and the hard disk drive versions of Tandy Corp.'s Tandy 2000 and Texas Instruments, Inc.'s Professional microcomputers.

Enhancements include access to

Microsoft Corp. MS-DOS-like commands, analysis of multiple data files within one session, creation of automatic profiles for customizing set options, inclusion of command files with the SPSS/PC command permitting files for batch processing and interruption of processing before a command is executed or during execution or printing.

The package is priced at \$795, the

vendor said. SPSS is located at 444 N. Michigan Ave., Chicago, Ill. 60611.

#### Microprophit upgrades to offer Help screens, program ability

SAN DIEGO — Via Computer, Inc. has announced enhancements to its Microprophit financial planning and modeling system for the IBM Personal Computer.

Microprophit, priced at \$695, is the personal computer version of Via's mainframe-based Prophit II modeling system and reportedly has the same capabilities, including 50 prewritten modeling functions. Among those functions are depreciation, loan amortization, simultaneous equations and currency conversions.

Microprophit 3.11 enhancements include such features as customized

Help screens and the ability to program several command sequences. Operator intervention with one-time processed reports is said to be eliminated.

Microprophit is said to contain full consolidation and analytical functions, such as goal-seeking, "what-if" scenarios, line-item and base-period ratios. Also included are eight alternative forecasting methods and the ability to produce customized reports.

Via Computer is located at 7177 Construction Court, San Diego, Calif. 92121.

#### Curtis introduces ROM board

ST. PAUL, Minn. — Curtis, Inc. has announced an accessory card for the IBM Personal Computer and compatible microcomputers.

Romdisk PC consists of erasable read-only memory (ROM) and circuitry said to emulate a write-protected diskette and disk drive controller.

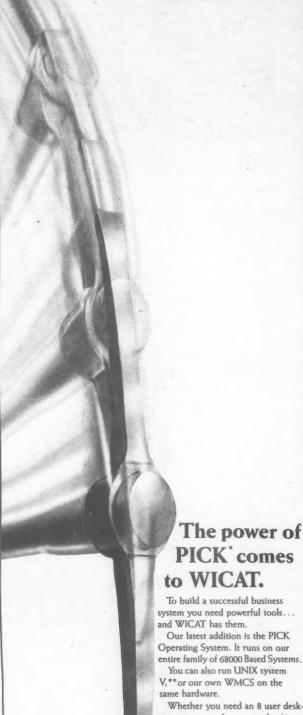
Romdisk PC is said to operate with IBM PC-DOS and Microsoft Corp.'s MS-DOS operating systems.

Users can select an operating system, programs or program files and

copy them from disk into the ROM with a utility program, according to a Curtis spokesman.

Three models are available. Romdisk PC-0, at \$599, is a half-size board with 180K bytes of storage. Romdisk PC-1, also \$599, is a full-size board with 180K bytes of storage, upgradeable to 360K bytes. Romdisk PC-2, at \$99, is a full-size board with 360K bytes of storage.

Curtis is located at 22 Red Fox Road, St. Paul, Minn. 55110.



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cache memory and no wait states, you'll find it at WICAT. Give us a call at (801) 224-6400, or write to WICAT Systems, P.O. Box 539, 1875 South State Street, Orem, Urah 84058.

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\*\* UNIX to a tradement of ATaT Bell Laboratories.

# Sperry V.I.P.S. Voice Information Processing System. The intelligent way to use the telephone.

Now you can abolish the wasteful game of telephone tag. And do away with a tremendous amount of costly memo

writing.

It all happens, quickly, with the computer-based Sperry V.I.P.S.™—Voice Information Processing System.

As a stand-alone system, V.I.P.S. will store, send, and receive voice messages at your command-to or from any Touch-Tone® phone, anyplace, anytime. You can even integrate V.I.P.S. with the Sperrylink™ Office Information System. You can prepare messages today for automatic delivery next Tuesday—to one

person or to voice mailing lists you've

established in advance.

Command V.I.P.S. to make calls—it will keep calling until delivery is confirmed. Have it wait for calls. Deliver confidential messages to a select few. Or make general announcements to

You can authorize anyone or everyone in your organization to use V.I.P.S. Users can call the system and pick up messages. Leave replies. Even forward someone else's message-with or without

comments—to others.
Team up V.I.P.S. with a host mainframe computer, and you can enable any Touch-Tone phone to become an on-line computer terminal. Then V.I.P.S. can handle such applications as catalog ordering, inventory control, travel reser-

vations, banking. The system's interactive voice prompting opens up virtually unlimited application possibilities.

To appreciate the brilliance of V.I.P.S., you should see and try it, first-hand. Which you can do at a nearby Sperry Productivity Center. Or, have us send you literature. Phone toll-free: 1-800-547-8362. Or write: Sperry Corporation, Box 500, Blue Bell, PA 19424-0024.

Touch-Tone is a trademark of AT&T V.I.P.S. and SPERRYLINK are trademarks of Sperry Corporation. ©Sperry Corporation 1984.



# THE PROBLEM SPEAKS FOR ITSELF. AND SO DOES THE SOLUTION. SPERRY V.I.P.S.



#### MICROCOMPUTERS

#### Micro Focus announces Mac Cobol for Apple's Macintosh

By Kathleen Sullivan CW West Coast Bureau

PALO ALTO, Calif. - Micro Focus Ltd. has introduced Mac Cobol, a version of the Cobol programming language designed for Apple Computer, Inc.'s Macintosh computer.

According to Eagle Berns, technical manager of the firm's Mac Cobol group, Micro Focus applications written for the IBM Personal Computer are compatible with Mac Cobol, so existing applications can be ported and then modified to take advantage of the Macintosh's user interface.

Mac Cobol is said to provide access to 386 of the Macintosh's 512 read-only memory (ROM) routines. The Mac Cobol developer can compile calls directly from ROM routines, as well as build windows and menus into the application, according to

Mac Cobol is said to feature the company's High Performance Level II compiler and to include the

A Cobol source code editor.

A generate tool that compiles Micro Focus intermediate code into Motorola, Inc. 68000 object

code.

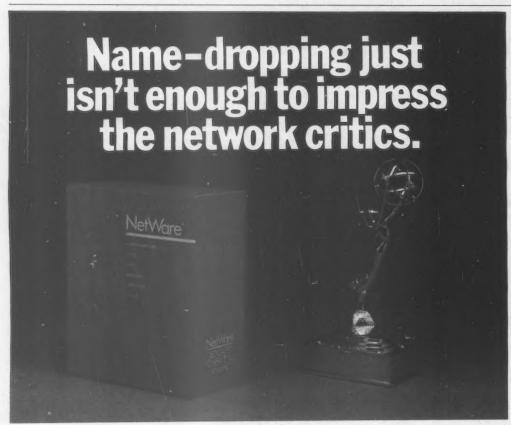
A run tool that allows execution of multiple interdependent programs that have been compiled and generated.

A build tool creating distributable, executable modules that combine applications programs with Micro Focus Application Support Modules.

Isam file handling. Mac Cobol can handle up

to 12 files using an external disk drive on the Macintosh.

Micro Focus is located at 2465 E. Bayshore Road, Palo Alto, Calif. 94303.



Now that the local area network (LAN) industry is booming, some pretty big names in the computer business are jumping on the bandwagon. Their goal is simple: get a LAN on the market and let all those who pay homage to

The Name run out and buy it.

At Novell, we don't have a big name to drop when selling NetWare, our high-performance LAN operating

system. So we let our technology do the talking. And the network critics are not only listening. they are taking notice.

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No LAN operating software outperforms NetWare. With speed,

flexibility, security and hundreds of multiuser applications, NetWare sets a standard for the entire LAN industry.

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NetWare is more than a LAN operating system.

Currently, NetWare software is available for 24 LAN hardware systems. Plus, four complete LAN systems are sold and serviced by Novell.

Compatibility.

Because NetWare is compatible with DOS 3.1, it can run any application written for the IBM PC Network Program. And NetWare greatly increases IBM PC Network performance and applications software

Internetworks.
Using bridges, NetWare can connect separate LAN systems into one large internetwork. In fact, every LAN Novell supports can be interconnected—any number, in any of the various topologies.

#### Remember the name.

The one LAN system making a big impression on the network critics is the one with the not-so-big name:

NetWare, from Novell. Remember it when you want a high-performance LAN instead of a high-powered name.

For more information, call or write:



strial Park Drive, Orem, Utah 84057 (801) 226-8202

#### SOFTWARE

Smart Software, Inc. has announced enhancements for its Smartforecasts software for business forecasting and data analysis on the IBM Personal Computer.

Smartforecasts 1.1 will accommodate users whose data commodate users whose data is reported by accounting month, business week or business day, according to the vendor. Reportedly, it can also accommodate data generated annually, quarterly or monthly.

Another enhancement is the ability to transfer data to other personal computer programs, such as Lotus Development Corp.'s 1-2-3 spread-sheet; Smart Software said.

Smartforecasts is said to feature automatic forecasting, which selects the statistical forecasting method appropriate for the user's data and tunes that method for greatest accuracy.

Smartforecasts 1.1 priced at \$495 and requires 256K bytes of internal memory, a color-graphics adapter and graphics monitor.

Smart Software, 392 Concord Ave., Belmont, Mass.

Software Studios, Inc. has released Freeware, its PC-Desk program, which features a calendar/reminder, a calculator, an address file, an automatic phone dialer, a word processor, a repetitive letter writ-er, a label and envelope printing facility and telephone directory.

The program, for IBM Personal Computers and compatibles, requires 64K bytes of memory, a disk drive, a printer and IBM's PC-DOS 2.0 or higher operating system.

A \$25 registration fee covers mailing costs, a 21-page user manual and future updates and telephone support. Once the fee is received, the user may freely copy and distribute the software, the vendor said. Registered owners will receive instructions on how to bypass the sign-on Freeware message and how to incorporate a password ac-

Software Studios, 8516 Su-garbush Court, Annandale,

See SOFTWARE page 114

# Test Your Microcomputer IQ\*

1.	Name a totally integrated software package that was rated #1 by Software Digest.	
2.	Where can you buy an IBM PC XT or AT, AND have it installed, AND get on-site warranty for it?	
	Who will educate IC personnel or end-users at their site or yours?	Mel.
-	What provides virtually any type of PC communications capability — from simple TTY to 3278/79 emulation?	
-	What provides a micro software facility that allows you to customize a system to your specific requirements?	
6.	Who are the premier micro consultants to the Fortune 1350 companies?	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	Who has made the word hot-line obsolete, by staffing a full- service support center with computer professionals?	
8.	What is the easiest way for an IC manager to satisfy the many end-user needs in the organization?	
9.	What company's evolutionary approach to software and service (also demonstrated by NOMAD, now NOMAD2, the premier 4GL/DBMS) ensures that they'll be a major force in the micro marketplace for years to come?	
0	Name the companies that can provide all of the above?	

\*(Turn Page Upside Down for Answers)

I. DunsPlus Software 2. From DunsPlus 3. The DunsPlus Education Staff 4. DunsPlus's Communications Utilities 5. The DunsPlus Tool Kit 6. DunsPlus 9 PONS-sional Consulting Staff 7. The DunsPlus Support Center 6. Call DunsPlus at 800-DNB-BUS 9. Dun & Bradstreet, the parent company of DunsPlus 10. DunsPlus

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#### MICROCOMPUTERS

#### SOFTWARE from page 112

© Caetec Software, Inc. has introduced solids-modeling software said to allow engineers to configure the IBM Personal Computer XT as a stand-alone mechanical design workstation.

The package, which runs under IBM's PC-DOS 3.0, is said to integrate a three-dimensional solids modeler with automatic finite-element surface mesh generation.

face mesh generation.
Graphics' capability includes three-dimensional color shading, outline views with suppressed hidden lines and two-dimensional and three-dimensional section views. Features include on-line documentation, user-programmable function keys and batch-mode capability.

The price of the software is \$9,500 for the solids modeler component,

\$5,500 for the finite-element modeler component and \$2,000 for the analysis interface. Purchased together, the cost is \$15,000.

Caetec Software, Suite 109, 5 Dunwoody Park, Atlanta, Ga. 30338.

■ Concept Omega Corp. has introduced its Concept G business graphics system for Microsoft Corp.'s MS-DOS and Xenix, AT&T's Unix and SMC Software Systems' Thoroughbred OS operating systems.

Concept G reportedly can automatically generate a graph from data and can generate a horizontal or vertical bar chart from information contained in any Business Basic data file. Its bar charts can be designed to user specifications or automatically scaled to existing data.

Other options are said to include

chart labels, value displays, footers, headers and the ability to save and retrieve graph specifications.

Concept G costs \$495. Concept Omega, P.O. Box 6818, Bridgewater, N.J. 08807.

■ Execustat, Inc. has introduced its Execustat statistical analysis package for the IBM Personal Computer.

Execustat reportedly offers the functions of basic plotting, descriptive methods, estimation, time-series analysis, regression analysis and financial calculation.

The package also includes a pulldown calculator, scratch pad and appointment calendar, the vendor said. It reportedly permits graphics editing through interactive cursor movement and can import data from several popular Personal Computer software packages.

Execustat requires a Personal Computer with 256K byes of internal memory, two diskette drives, a graphics card and a high-resolution graphics board. It costs \$495.

graphics board. It costs \$495. Execustat, Research Park, 2 Wall St., Princeton, N.J. 08540.

Poseidon Systems has introduced its Polipac retail data file collection software for usé on the IBM Personal al Computer and personal computers under Digital Research, Inc.'s CP/M and CP/M 86 operating systems.

Pollpac reportedly can interact with Poseidon's PAC communications hardware to upload data to a micro from electronic cash registers and point-of-sale (POS) terminals. The latter two types of equipment require an RS-232 port and use of a communications protocol.

Pollpac also reportedly allows data to be sent to electronic cash registers and POS systems to set their initialization parameters and alter data in memory.

Pollpac requires a personal computer with at least 128K bytes of internal memory and a real-time clock interrupt. It is priced at \$1.500.

interrupt. It is priced at \$1,500.
Poseidon Systems, 223 Crescent
St., Waltham, Mass. 02154.

■ Heuristic Computer Systems has introduced its HCS/Editor, a full screen editor for the IBM Personal Computer and personal computers under Digital Research, Inc.'s CP/M operating system.

operating system.

HCS/Editor functions are said to include the use of all free memory, a text entry mode, sorted disk directory, file recovery and full disk recovery. Also provided are functions to edit, browse, delete, rename and print.

The package reportedly can copy, create and delete files, and permit users to copy data between two edit sessions. HCS/Editor reportedly is also able to create specially defined function keys, including those for screen refresh, four-way data scrolling and insertion and deletion of characters.

HCS/Editor requires 192K bytes of internal memory under IBM's PC-DOS or Microsoft Corp.'s MS-DOS operating system and requires 64K bytes under CP/M. The price of HCS/Editor is \$94.95.

Heuristic Computer Systems, 853 Hickory Drive, Carmel, Ind. 46032.

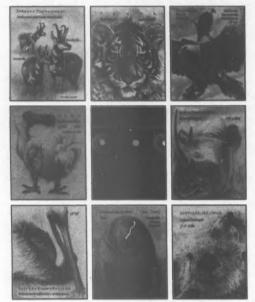
Absoft Corp. has introduced Macfortran, a version of the company's Ansi Fortran 77 Compiler for the Apple Computer, Inc. Macintosh.

According to the vendor, Macfortran supports pull-down menus, windows and the Macintosh mouse. The package includes a full screen sourcelevel debugger, linker, library manager, full toolbox interface, Apple's Edit text editor and documentation. Macfortran is said to be a full im-

Macfortran is said to be a full implementation of the Ansi Fortran 77 standard, allowing mainframe Fortran programs to be downloaded, recompiled and run without modification.

Macfortran reportedly will run on the single diskette drive 128K-byte version of the Macintosh. The software costs \$295.

Absoft, 4268 N. Woodward, Royal Oak, Mich. 48072.



# Mega Group takes IBM mainframes off the endangered species list.

You hear people say that mainframes are a dying breed. They believe the micros are taking over.

But what they don't know is that Mega Group software is dedicated to keeping mainframes alive and well. It's personal software that spreads mainframe power to everybody's individual workstation.

So that now, with any 3270type terminal, you can do even more than you can do with a micro. Just as easily. Just as fast. And for a whole lot less money.

Mega Group's campaign to preserve the mainframe began with MegaCalc," the first full function electronic spreadsheet for IBM and compatible mainframe systems.

Next came MegaFile™ and MegaGraph.™ MegaFile allows you to join data from more than 35 MegaCalc spreadsheets. MegaGraph gives you presentation-

quality graphics for "picturing" MegaCalc data with eight different types of graphs.

With MegaCalc, you get up to 702 columns and 9,999 rows for entering an enormous amount of data. You can update it, change it, perform instant "what if" analysis, all on your CRT.



With full color capability and up to 100 windows, MegaCalc makes work sheets simple to set up and use. MegaCalc also has over 100 functions built in for advanced abblications.

All of your microcomputer data and models from Lotus 1-2-3,° VisiCalc,° or SuperCalc° can also be up or down loaded directly into MegaCalc with a single command.

As far as cost goes, your data processing dollars have never gone further. MegaCalc will support every terminal and user on your mainframe for about the cost of a single microcomputer workstation. And we'll give you a 30-day, no obligation trial to prove it.

Send for our free poster. A 17" x 23" poster of our endangered species illustration above is yours for the asking. Just write or call to join the cause to Save the Mainframe.

Mega Group, 17701 Mitchell Avenue North, Irvine, CA 92714. (714) 474-0800.



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#### MICROCOMPUTERS

#### SYSTEMS

Cromemco, Inc. has introduced its CS-400 line of hard disk drivebased supermicrocomputers, available in models offering 4M, 8M or 16M bytes of random-access memory (RAM).

According to the vendor, the systems come standard with a 514-in., 390K-byte diskette drive and a 32Mbyte cartridge tape drive for data

A choice of 140M-byte or 280Mbyte hard disk storage units also is offered.

Models in the CS-400 line are de-livered with the AT&T Unix System V multiuser operating system. Under Unix, the CS-400 models can utilize 740K bytes of RAM as a buffer area, Cromemco said

The CS-400 series uses Cromem-co's XPU processor. Each CS-400 is said to have a capacity for 21 boards.

The systems are priced ranging from \$24,995 to \$53,995 depending on RAM, hard disk capacity and other options.

Cromemco, 280 Bernardo Ave., Mountain View, Calif. 94039.

M Applied Digital Data Systems Inc. has released its Mentor 1500 microcomputer system.

The Mentor 1500 runs as a multiuser system under Applied Digital's enhanced Pick & Associates, Inc. Pick operating system or as a stand-alone IBM Personal Computer XT-compatible under Microsoft Corp.'s MS-DOS.

The Mentor 1500 has a built-in 51/4in. floppy drive with 320K- or 360Kbyte capacity and a 10M-byte capacity hard disk. Its 256K-byte randomaccess memory is expandable to 640K

A 12-in, monochrome monitor is included, and a 12-in. color monitor is

The price of the Mentor 1500, including both operating systems, is

Applied Digital Data Systems, 100 arcus Blvd., Hauppauge, N.Y. Marcus 11788.

Sony Corp. of America's Information Products Division has un-wrapped its Model 10 word processing console and software system.

The Model 10 word processing system, with 288K bytes of internal memory, is available in configurations with 20, 35 or 55 char./sec printers. In addition to the CPU and 9-in., 80-char. by 25-line black-on-white display, the console includes room for one or two Sony 31/2-in. floppy disks

According to the vendor, the li-brary of software available for the Sony Series 35 system will be available for the Model 10.

The Model 10, with basic word processing software but no printer, costs \$2,395.

Sony, Sony Drive, Park Ridge, N.J. 07656.

■ Microsystems International Corp. has introduced its ME2 and Executive Workstations. which reportedly allow IBM Personal Computer users to create multiuser systems without the addition of fully configured Personal Computers.

The ME2 and ME5 reportedly include an IBM Personal Computercompatible keyboard, an 80-char. by 25-line monochrome monitor, one se rial port and an Intel Corp. 8088 microprocessor. The ME2 offers 256K bytes of internal memory; the ME5

provides 512K bytes.

When installed with a Personal Computer, both are said to provide all of the functions of a second Personal Computer, including the use of Personal Computer software such as Lotus Development Corp.'s 1-2-3 and Ashton-Tate's Dbase II. Under MSI's RTNX-M software, file and record locking reportedly are provided to the network.

The ME2 is priced at \$1,750, while

the ME5 costs \$2,150.
Microsystems International, 100 Pennsylvania Ave., Framingham, Mass. 01701.

#### COMMUNICATIONS

Paramis Corp. has introduced a combination file and print server designed for use with Apple Computer, Inc.'s Appletalk local-area network and the Apple IIe and Macintosh microcomputers.

Called Paraserv, the server is said to include hardware and and software that will allow an Apple IIe or Apple II+ with an Apple Profile hard disk drive to act as a multifunction Appletalk network server. Paraserv enables Appletalk users to share expensive resources, such as disk drives and printers, that are connected to the Apple II, according to the vendor.

The hardware consists of a server processor, a single-board computer in the form of an interface card installable in the Apple IIe expansion slot.

The processor reportedly includes the functions of up to six separate cards: four serial interface ports, one parallel printer interface and a realtime clock, the vendor spokesman

The software includes file and print service to both Macintosh and Apple II users.

Paraserv is priced at \$595 for the Macintosh. A workstation card for the Apple II costs \$249.

Paramis, Suite 101, 1011 Brioso Drive, Costa Mesa, Calif. 92627.

National Information Systems Inc. has announced that a version of microcomputer-to-mainframe communications software product Continued on page 118



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Software

The.





#### MICROCOMPUTERS

Continued from page 116

is now available for all Fortune Systems Corp.'s computer systems running AT&T's Unix operating system.

Teleport II is said to provide communications between micros and mainframes and between micros and micros. It is said to offer both local micro terminal emulation and transfer of information between local and remote systems.

The software is said to feature a micro and mainframe server mode that provides automatic file transfer and logout after initial connection is made to a remote system.

made to a remote system.

Prices for microcomputers range from \$150 to \$495, depending on the quantity ordered, the vendor said.

quantity ordered, the vendor said. National Information Systems, 20370 Town Center Lane, Cupertino, Catif. 95014.

M Network Software Associates, Inc. has introduced Adaptsna Pccom, a software package that reportedly permits IBM Personal Computers operating in IBM Systems Network Architecture/Synchronous Data Link Control environments to communicate.

Adaptsna Pccom reportedly allows communication over the same highspeed lines that connect the Personal Computers to the user's mainframe but requires no mainframe intervention.

The software provides file trans-

fer capabilities and allows the files on the called Personal Computer to be renamed or deleted remotely by the calling Personal Computer.

Using the software, the calling micro is said to be able to change a directory path or display a current di-

rectory, among other functions.

Adaptsna Pccom is priced at \$475 and requires a Personal Computer with at least 128K bytes of internal memory, an IBM SDLC adapter card and a synchronous modem.

Network Software Associates, 19491 Sierra Soto, Irvine, Calif. 92715

■ Forte Data Systems has introduced its Fortelink SNA remote micro-to-mainframe communications software for the IBM Personal Computer line.

Fortelink SNA reportedly provides a connection to Forte's file transfer package, Fortenet, allowing remote micros to obtain infomation in data files and to tap into mainframe application programs. It also allows Personal Computers to emulate remote IBM 3274/3276 controllers, functioning as members of an existing IBM 3270 network.

A fifth session operates in the background to convert the Personal Computer printer into a IBM 3287 printer. Fortelink SNA is priced at \$605

Forte Data Systems, 2205 Fortune Drive, San Jose, Calif. 95131. Beehive has announced its PC-178 link between the IBM Personal Computer and compatibles and the IBM 3270 network.

PC-178 allows the microcomputer to display a screen that looks and acts like an IBM 3178 terminal screen. With the aid of a protocol converter, such as Beehive's CC-74, microcomputers are said to be able to talk to an IBM bisynchronous or Systems Network Architecture net.

PC-178 comes in two models. The PC-178 allows a personal computer to work with any protocol converter that is compatible with Beehive's DM-78 or ATL-078 terminals and costs \$195. The PC-078 works only with the Beehive CC-74 and is priced at \$195 per cluster.

Beehive, 4910 Amelia Earhart

Beehive, 4910 Amelia Earhart Drive, Salt Lake City, Utah 84116.

■ Telexpress, Inc. has announced that its enhanced Teleterm asymchronous communications package now runs on micros that run under IBM's PC-DOS, Microsoft's MS-DOS, Radio Shack's L-DOS and TRS-DOS and AT&T Unix operating systems.

Additional features include terminal emulation of Digital Equipment Corp.'s VT100 and VT52 terminals, IBM's 3101 Model 10, Applied Digital Data Systems Inc.'s Regent 25 and Viewpoint terminals and others. An emulation editor can be used to create and/or edit additional terminal emulations.

The Teleterm-EM package is now able to operate in several additional networks, including ITT's Timetrans, Western Union's Easylink, GTE's Telenet, MCI's MCI Mail and RCA's Global Communications, the vendor said. Disk-to-disk file transfer can be performed among all microcomputers equipped with Teleterm-EM, and the package can perform file upload and download procedures with any asynchronous system. Additional features include an unattended operation mode and a transparent print mode.

The price of Teleterm-EM ranges from \$195 to \$225

from \$195 to \$225. Telexpress, P. O. Box 217, Willingboro, N.J. 08046.

■ Infoservices, Inc. has announced its IST100 block and character emulation of Prime Computer's PST100 terminal for IBM Personal Computer XTs and compatibles.

er XTs and compatibles.
IST100 block and character emulation operates through a model interface or direct connect at transmission rates from 300 bit/sec to 9.6K bit/sec. The package reportedly gives users the capability to use software application programs on a microcomputer without additional software installation or modification to the Prime host computer.

The software costs \$295.
Infoservices, Suite 22, 1728 Montreal Circle, Tucker, Ga. 30084.
See TALK page 120

#### TAPESTRY from page 109

Five hundred on-line Help screens are also reportedly included.

With Tapestry's icon-based approach, network files are contained in "drawers" within "filing cabinets," Sutton said. Drawers may be

shared or private, and drawer space is dynamically allocated by the network. Tapestry provides password protection, with up to five levels of file read/write protection. File- and record-locking reportedly are available for multiuser applications.

The electronic mail system con-

tains a full-feature text editor and the ability to enclose files generated in other applications. Tapestry also supports messages of incoming mail within amplications.

within applications.

The telephone manager stores names, numbers and other information and can search for entries and

autodial calls, according to Torus.

Tapestry's communications gateways emulate TTY and Digital Equipment Corp. VT100-type terminals and reportedly can find a free modem on the network and then connect to remote services. Sutton said Torus plans to implement IBM 3270 emulation as well but gave no date.

The applications library stores PC-DOS applications and downloads them to network workstations (subject to licensing and technical limitations). Some current applications work imperfectly under this setup, Sutton acknowledged, but Torus provides documentation covering the packages' limitations.

Tapestry runs on the PC Network equipped with IBM Personal Computers, Portable Personal Computers, Personal Computer XTs and Personal Computer ATs. It also may run with some floppy disk drive compatibles, Sutton said.

The network software requires PC-DOS 2.0 and up, with 256K bytes of random-access memory (RAM) for workstations and 320K bytes of RAM for servers. Unlike PC Network Program, Tapestry does not require dedicated network servers. A Personal Computer with a hard disk, Personal Computer XT or Personal Computer AT will act as a server. Tapestry supports mouse products from Mouse Systems Corp. and Microsoft Corp.

Torus Systems is affiliated with Torus Systems Ltd. of Cambridge, England, a computer communications company. IBM recently signed an agreement to distribute Tapestry in Europe, according to Torus Systems Ltd. The English firm developed Icon, a similar network software package for Ethernet hardware, available in Europe since last July.

Europe since last July.
Torus Systems is located at Suite
103, 485 Seaport Court, Redwood
City, Calif, 94063.



# LONDON

"The computer is down."

It is ironic that when we become dependent on computers, we are at their mercy. As more and more companies go on line, the industry reliability standard of 98.5% becomes unacceptable because it means your computer is liable to go down once every two weeks, on a statistical average.

So, if you are a broker, banker, manufacturer, or businessman who relies on your computer more and more, take note: Stratus Computers are designed not to fail; not once every two weeks, or once every 200 weeks, or once every 2,000 weeks!

#### <u>Debunking The Myth That All Fault Tolerant Computers Cost More.</u>

It is a common and reasonable assumption that because there is redundancy (extra programming, or extra components) in fault tolerant computers, that makes them cost more. Where the

	STRATUS XA400	IBM 4381	HP 3000 68	DEC VAX-11/782
RELATIVE PERFORMANCE*	125	100	64	109
PRICE	\$446,350	\$707,897	\$437,754	\$656,889
PRICE PERFORMANCE	\$ 3,571	\$ 7,079	\$ 6,840	\$ 5,999

\*Computerworld, August 20, 1984

All systems are comparably configured with identical amounts of memory, disk space, and communication lines. But, only the Stratus price includes fault tolerand

redundancy is in expensive software, this is true. But Stratus has hardware-based fault tolerance that takes advantage of the extraordinary advances in chip technology. The result – price drops. The fact of the matter is, our hardware redundancy adds a mere fraction to our cost, and absolutely nothing to your purchase price. What's more, in overall price/performance comparisons against the top computer names, including IBM, DEC, and Hewlett Packard, Stratus was at the front of the pack, despite the fact that it included fault tolerance, while the others didn't.

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Times, For The Money.

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Stratus CONTINUOUS PROCESSING

Now that the world relies on computers it needs a computer it can rely on.

#### **MICROCOMPUTERS**

#### APPLE from page 118

W Honeywell, Inc. has added a file transfer facility to its PC7800 software linking Honeywell DPS 8 and DPS 88 mainframes with Honeywell Microsystem PC and Microsystem 6/10 micros and certain Microsoft Corp. MS-DOS-based micros.

The file transfer facility is based on the Columbia University Center for Computing Activities' Kermit protocol.

The extended PC7800

software exchanges files from a Honeywell's GCOS 8 time-sharing system to a Kermit-based program residing on a micro. The software emulates function keys and switches operable on Honeywell VIP7800 series terminals. The package comes on a 5¼-in. floppy diskette and costs \$495 per micro.

Honeywell, P.O. Box 8000/A-92, Phoenix, Ariz. 85066. m Bizcomp Corp. has released its Intellimodem EXT stand-alone 300/1,200 bit/sec communications system for use with serial RS232-equipped computers or terminals.

A voice insert capability allows use of a standard telephone to add integrated voice to a personal computer workstation. For data uses, the modem is compatible with Hayes Microcomputer Products, Inc. modems. A call progress detection feature alprogress detection feature alprog

lows the modem to sense telephone system signals like a busy or dial tone and display these conditions on the computer screen.

Cost of one unit is \$499.

Bizcomp, 532 Mercury

Drive, Sunnyvale, Calif.

#### STORAGE DEVICES

■ Interphase Corp. has introduced its Mayerick Stor-

age Module Device (SMD) PC-80 disk controller for the IBM Personal Computer AT and the AT&T 6300.

AT and the AT&T 6300.

The SMD PC-80 reportedly offers support for SMD disks in capacities up to 800M bytes or more, controls two SMD drives with one controller and supports disk data rates of 20M byte/sec.

The SMD PC-80 for the Personal Computer AT and AT&T 6300 costs \$1,295.

Interphase, 2925 Merrell Road, Dallas, Texas 75229.

#### APPLE from page 109

Computer world.

Just when we are now (finally) starting to get a flood of impressive Macintosh software, we are seeing Macintosh-like, window-oriented software trickle into the IBM where it is a welcome change.

Some of these programs, such as Microsoft Corp.'s Word, are commercially successful. Others, such as Digital Research, Inc.'s Graphics Environment Manager or Torus Systems, Inc.'s Tapestry (see story page 109), may or may not carve out a niche.

But these products are all examples of an ongoing revolution in software design. The change is easily seen in a simple experiment: Set up a 512K-byte Macintosh next to a high-end IBM Personal Computer or compatible and watch where those casually interested in new programs end up.

On the Macintosh, beta test programs sometimes can be run happily without any documentation whatsoever. Back in the Big Blue environment, however, the different software environment is like a slap in the face — those hundreds of pages of documentation, all those commands.

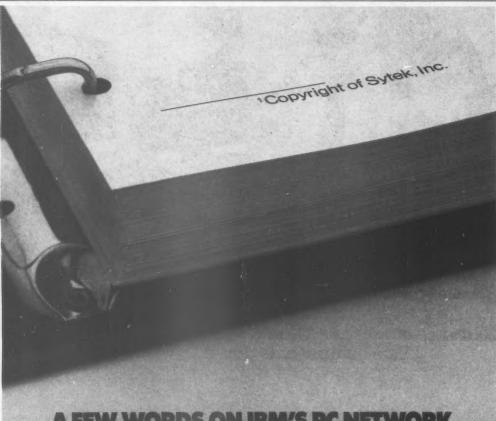
Comparisons of the two interfaces themselves are even more dramatic. IBM's Topview, which takes only timid steps toward a graphics-based interface, looks like a sick puppy compared

with the Macintosh.

Although good PC-DOS programs today may be more powerful or full-featured than their competitors on the Macintosh, generally they are still stuck with those high learning barriers. People just don't want to make the effort unless there is no other choice.

And there is a choice.

The graphics-based user interface did not begin with the Macintosh, of course, and there is nothing about that machine to nail down a monopoly. On the contrary, a Personal Computer AT with a high-resolution graphics adapter and monitor looks very promising. When AT supplies increase and new software hits the street, users may begin to see the best of both worlds.



#### A FEW WORDS ON IBM'S PC NETWORK.

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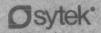
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So if you need a flexible, do-it-yourself way to connect personal computers, ask IBM about their PC network.

But if your plans are more ambitious, speak to the only company that's installed over 500 open broadband networks worldwide.

Sytek. For a few more words.



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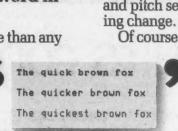
#### See vour dealer for a quote.

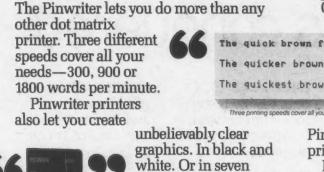
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# sours former Apple staff

By Kathleen Burton CW West Coast Bureau

CUPERTINO, Calif. The recent de partures of its whiz kid cofounder and other key engineers and marketing employees from Apple Computer, Inc. highlight the

dramatic corporate cultural changes that are sweeping the eight-year-old

company.
According sources, since Ap-ple decided to challenge IBM for the Fortune 1,000 of-fice market last year, its highly distinctive corporate culture has become diluted because of



Wozniak

the hiring of consumer-oriented outsiders. These bureaucracy-bound outsiders have narrowly focused on new products and strategies geared for the business market, disillusioned former employees claimed in recent interviews.

The most celebrated departure recently was that of Apple cofounder Steve Woz-niak, who left the company earlier this month to work on his own noncomputer projects.

Wozniak said he was disappointed that the Apple IIe, the company's most financially successful product, is being ignored in favor of the Macintosh, the product Apple targeted at the business market.

"There's a lot of Macintosh and Apple II territorialism going on now," Wozniak said, "and it's fragmenting the company." He said the company's decision to focus its energies on business, and away from its traditional educational and home markets,

See APPLE page 132

## Cultural shift | CDLA to alter tax stance

Depreciation rescheduling effort may be dropped

By Peter Bartolik CW Staff

BOCA RATON, Fla. -- The Computer Dealers and Lessors Association (CDLA) is considering ending a two-year effort to shorten tax depreciation rate schedules for computer equipment and is divided over the U.S. Department of the Treasury proposal to eliminate the investment tax

During a closed-door session at its spring meeting held here recently, CDLA nembers received a briefing on alternatives to the Treasury Department's flat tax proposal, which would extend depreciation tax reductions for computer equip-

ment over an eight-year period.

Although the CDLA has been lobbying

for two years to shorten depreciation schedules from five years to three years, association members were informed that the CDLA board of directors now believes a five-year schedule is most beneficial.

In a statement sent to members prior to the meeting, a transcript of which was made available to *Computerworld*, it also appeared that the directors favored repeal of the investment tax credit.

According to Ken Bouldin, the CDLA's legislative committee chairman and head of Economic Computer Sales, Inc., members were being polled at the meeting and a formal position on tax reform will be formulated in about two weeks. In the statement mailed out prior to the meeting, mem-

See CDLA page 126

Management Science America, Inc. announced the disposal of its international operations, leaving the domestic portion of Peachtree Software, Inc. as its last retail microcomputer software entity still on the auction block/125

An executive of AT&T Information Systems recently asked an association of dealers and lessors for help in establishing a thirdparty market for used AT&T equipment/126

The slowdown in the semiconductor industry continued, with Signetics Corp. announcing cutbacks and a shorter workweek/127

AT A GLANCE

BELLSOUTH

#### Sperry, ITT did discuss merger

By Peter Bartolik CW Staff

NEW YORK - Sperry Corp. and ITT announced recently they had discussed, but were unable to agree on, what would have been the largest merger to date in the in-

formation processing industry.

The companies, responding to rumors on Wall Street of an impending merger, announced they had held preliminary discussions on the possibility of ITT acquiring Sperry or a merger of the two companies during the last week in February. Those discussions were terminated after the companies failed to reach an agreement acceptable to both parties.

Analysts said ITT over the past few

months had been selling off various parts

See SPERRY page 131



#### Can tax revision survive lobbies?

ne influential U.S. senator thinks that special interest groups will kill off attempts at tax reform.

Speaking recently to one such interest group - the Computer Dealers and Les sors Association (CDLA), which focused on the tax issue at its spring meeting en. J. Bennett Johnston (D-La.), one of the ranking Democrats in the Senate, scoffed that the so-called "flat tax" pro-See TAXES page 130

#### CPE big item on regionals' omnivorous market menu

By James Connolly CW Staff

Second in a three-part series

Almost as quickly as U.S. District Judge Harold H. Greene could sign

the modified final judgment in January 1982 breaking up the Bell sys-tem, the seven new regional holding companies started looking for new ways to make money.

In their first 14 months of activity, the regionals have turned to cellular

mobile telephones, con-sulting, leasing, publishing and real estate as revenue sources. But the venture that has caught the public's eye most — and the regionals' mar-keting fancy — has been customer

premises equipment (CPE).

Under the modified final judgment, CPE subsidiaries can account

for only 10% of a regional's total revenue. But that 10% can amount to close to \$1 billion for a regional with more than \$9 billion in revenue, which translates into a CPE subsidiary almost as large as Apple Computer, Inc.

Spokesmen for the seven regional holding companies point to the same goal for their new, unregulated ventures and their traditional carrier service integrated information transfer. Barred from manufacturing equipment

for six more years, they see themselves as agents and planners, offering one-stop shopping for communications customers who need someone to sell them equipment, arrange for dial tones and manage the installed system.

'I think what you are going to see

BELL SOUTH CORP.

Operating Companies: South Central Bell Telephone Co. (Ala., Miss., Tenn., Ky., La.) Southern Bell Telephone and Telegraph Co. (N.C., S.C., Ga., Fla.)

Subsidiaries: Advanced Systems Division (CPE\*); Bell South Mobility (cellular); Bell South Financial Services Corp.

Number of Employees: 96,000 1984 Revenue: \$9.52 billion

1984 Earnings: \$1.26 billion (\$4.28 per share)

#### Products and Services

Switching and Telephone Equipment

American Telecom, Inc. Focus private branch exchange. Intecom, Inc. PBX. AT&T Merlin telephone system. GTE Business Communications Systems, Inc. Omni series. ITT Business Communications Corp. System 3100. Northern Telecom, Inc., SL-1 and SL-100. Tie Communications, Inc. telephones and keysets.

Office Equipment

Multiplexers and Modems New Ventures Paradyne Corp., General Datacomm Industries, Inc.

Digital Equipment Corp. office computers and software

Synchronet digital transmission services for small cities. Light-gate fiber-optic services into customer premises, Pulselink packet-switching data network. Cellular mobile telephone projects in Miami, New Orleans and Atlanta. Touchstar multifeature tele-

\*Customer premises equipment. Each regional holding company has its own CPE subsidiary

#### AT A GLANCE

#### AMERICAN INFORMATION TECHNOLOGIES CORP.

AMERITECH

Operating Companies: Illinois Bell Telephone Co.; Indiana Bell Telephone Co.; Ohio Bell Telephone Co.; Wisconsin Bell Telephone Co.

idiaries: Ameritech Mobile Communications, Inc. (cellular); Ameritech Communications, Inc. (CPE\*); Ameritech Credit Corp.; Ameritech Development Corp. (venture

Number of Employees: 77,700 1984 Revenue: \$8.34 billion

1984 Earnings: \$990.6 million (\$10.17 per share)

#### **Products and Services**

Switches and Telephone	NEC America, Inc. Neax 2400 private branch exchange and Electra key systems		
Equipment	Tie Communications, Inc. PBX, key systems and telephones AT&T telephones and Centrex console Ericsson, Inc. telephones and Autocom answering and switch systems Northern Telecom, Inc. SL-1 and SL-100 PBX		
Office Equipment	Davox Communications Corp. terminals Esprit Systems, Inc. terminals		
Multiplexers and Modems	General Datacomm Industries, Inc. multiplexers		
New Ventures	Agreement to provide Satellite Business Systems Real Estate Communications Corp. with equipment for multitenant services. Ameritech Credit offers financing for CPE, cellular and other contracts.  Cellular mobile telephone projects in Cincinnati, Detroit, Milwaukee, Chicago and other cities.  Financial interest in slow-scan video system company. International consulting service.  Agreements with companies developing fiber-optic and software-based local-area networks.		

#### AT A GLANCE

#### U.S. WEST, INC.

LUSWEST

Operating Companies: Mountain States Telephone and Tele-graph Co. (Colo., Utah. Ariz., N. M., Wyo., Idaho, Mont.); Northwestern Bell Telephone Co. (Minn., Iowa, Neb., S.D., N.D.); Pacific Northwest Bell Telephone Co. (Ore.,

S.D., N.D.J; Pacific Northwest Bell Telephone Co. (Ure., Wash., Idaho)

Subaidiaries: Firstel Information Systems, Inc. (CPE\*); New Vector Communications, Inc. (cellular); Interline Communications Services, Inc. (design and Installation); U.S. West Financial Services; Betawest (property)

Number of Employees: 71,000 1984 Revenue: \$7.28 billion

1984 Earnings: \$887 million (\$9.24 per share)

#### Products and Services

Switches and Telephone Equipment	NEC America, Inc. Neax 2400 private branch exchange Ztel, Inc. PBX Tie Communications, Inc. key systems and synthesized voice/ digital data system Intecom, Inc. PBX
Office Equipment	IBM Personal Computer Grid Systems Corp. personal computers
Multiplexers and Modems	Not announced
New Ventures	New Vector Communications planning cellular systems for Costa Rica and Gulf of Mexico area. Betawest authorized to provide public real estate development and management. Interline won a \$27 million federal contract for communications system serving agencies in the Bell Atlantic region and is pursuing similar contracts in other areas. Firstel markets Centron (Centrex) in addition to CPE and has opened franchised outlets in smaller markets.

#### AT A GLANCE

#### PACIFIC TELESIS GROUP (PACTEL)

Operating Companies: Pacific Telephone and Telegraph Co. (Calif.); Bell Telephone Co. of Nevada.

Subsidiaries: Pactel Communications Systems (CPE\*); Pactel

Mobile Access (cellular service); Pactel Mobile Service (cellular resale); Pactel Publishing; Pactel International; Number of Employees: 76,881

1984 Revenue: \$7.8 billion

1984 Earnings: \$828.5 million (\$8.46 per share)

#### **Products and Services**

Switches and Telephone Equipment	Tie Communications, Inc. private branch exchange Northern Telecom, Inc. SL-1 and SL-100 PBX AT&T Merlin telephone system American Telecom, Inc. Focus PBX
Office Equipment	Data General Corp. personal, mini- and superminicomputers and Comprehensive Electronic Office applications package C. Itoh Electronics, Inc. printers
Multiplexers and Modems	Timeplex, Inc. multiplexers Codex Corp. modems
New Ventures	Pactel International has signed a joint marketing agreement with Spanish National Telephone Co. for international sale of systems and services.  Pactel Properties plans real estate development, construction and management.  Offering 56K bit/sec Public Switched Digital Service.  Seeks to offer Intellicomm, integrated digital transmission of voice, data and video or customer-controlled bandwidth.

#### AT A GLANCE

#### BELL ATLANTIC CORP.



Operating Companies: New Jersey Bell Telephone; Bell Teletring companies: New Jersey ben Telephone; ben Telephone Co. of Pennsylvania; Chesapeake and Potomac Telephone Co. (Washington, D.C.); Chesapeake and Potomac Telephone Co. of Maryland; Chesapeake and Potomac Telephone Co. of Virginia; Chesapeake and Potomac Telephone Co. of West Virginia; Diamond State Telephone Co. (Del.).

Subsidiaries: Bell Atlanticom Systems, Inc. (CPE\*); Bell Atlan-

tic Mobile Systems, Inc. (cellular); Bell Atlantic Leasing Corp.; Bell Atlantic Ventures, Inc.

Number of Employees: 79,500 1984 Revenue: \$8.09 billion

1984 Earnings: \$973.1 million (\$9.94 per share)

#### Products and Services

Switches and Telephone Equipment	NEC America, Inc. Neax 2400 private branch exchange Intecom, Inc. PBX Tie Communications, Inc. Delphi series and Datastar Tie and NEC America, Inc. call-accounting equipment Eagle Telephonics, Inc. Eagle/One
Office Equipment	AT&T Datakit local-area network Proteon Associates, Inc. Pronet local-area network NEC Information Systems, Inc. Astra 300 series processors Esprit Systems, Inc. ESP 6310 terminal Digital Equipment Corp. terminals and printers Telex Computer Products, Inc. terminals
Multiplexers and Modems	General Datacomm Industries, Inc.
New Ventures	Bell Atlanticom's Mainwave maintenance service. Acquired Telecommunications Specialists, Inc. interconnect contractor. Acquired A Beeper Co. Associates paging and mobile radio marketing firm. Acquired Sorbus, Inc. computer maintenance firm. Acquired Tricontinental Leasing Corp. third-party leasing firm. Initiated Custom Local-Area Signaling Service, allowing business customers to screen calls, trace calls and return missed calls. Acquired MAI Canada equipment sales and service firm.

#### CPE from page 123

is a hybrid organization coming online. It is going to be forced to focus on customer needs. We are going to need solid product lines, but I think packaging and integration are the keys," said Richard J. Santagati, president and chairman of the board of Nynex Business Information Systems Co., the CPE arm for Nynex

According to Ross Bagully, director of strategic marketing for U.S. West, Inc., one of the seven re-gionals, "We have been restricted by the court in areas such as data switching, but that is obviously a booming part of our industry. We intend, and have been straightforward about it all along, to be proactive rather than reactive and go to the lim-

its that the court will allow."
In the CPE market, all seven regionals are selling several sizes of private branch ex-changes (PBX) and key systems for smaller customers. Most offer modems and multiplexers and some office equipment, ranging from personal comput-

ers to superminicomputers.

All seven regional holding companies are involved in the cellular mobile telephone market, while several of the regionals have moved into various types of consulting and services.

The latter group includes Bell Atlantic with its purchase of the Sorbus, Inc. third-party computer maintenance operation and Tri-Continental Leasing Corp. Richard

Notebaert, vice-president of marketing for American Informa-

tion Technology (Ameri-tech), said, "Three years from now, I see us handling a full array of equip-ment that provides [for] all of a customer's communications needs.

Notebaert said this array of prod-ucts will include computers, PBXs

SOUTHWESTERN BELL CORP.

and office equipment.

Ameritech, like several other regionals, is marketing Centrex service, in which switching functions for all an organization's extensions are performed at the central office. The company is also marketing the PBXs which Centrex competes.

This has led to complaints from other Centrex resellers that the regionals are providing their CPE arms with preferential deals and that salesmen, except those with Ameritech, are promoting PBXs more than

tems are marketing Data General Corp.'s Comprehensive Electronic Office software, paired with DG computers that range from the Data General/One portable computer to the MV10000 superminicomputer.

Nynex has already opened, and Pactel plans to open, retail computer stores, targeting small- to mediumsize businesses. But the majority of the regionals' CPE business is through direct sales.

The move into CPE sales, which

most of the seven regionals claim will never include mainframe sales,

creates new opportunities for vendors. It also has left one significant vendor largely out in the cold - AT&T.

'Our only AT&T product is the Merlin system [an electronic multiline telephone system]. Their other products weren't ready. When we were going through our research for our product line and our pricing structure, AT&T was going through its own decision making," Santagati said.

Some observers perceive the lack of interest in AT&T prodexcept for, perhaps, a handful of small systems offer-ings such as Merlin and Bell Atlanti-

com Systems, Inc.'s offer of the AT&T Datakit local-area network — as an indication that the regionals want to establish their independence.

#### **CPE** market winners

Among the winners in the battle for the CPE market, with multiple contracts with the regionals, are DG and multiplexer and modem manu-facturer General Datacomm Industries, Inc.

Also included in this group are PBX and telephone equipment ven-dors Northern Telecom, Inc.; Tie Communications, Inc.; NEC America, Inc.: and Intecom. Inc.

Tie Communications, with a variety of PBX and key system offerings, has marketing agreements with all seven regionals.

#### MSA unloads international subsidiary

ATLANTA - Only the domestic operations division of Management Science America, Inc.'s (MSA) floundering microcomputer software business remains to be sold in the wake of MSA's recent announcement that it has dismantled its international operations subsidiary.

MSA said that Plusmark Business

Systems Ltd. of Maidenhead, England, had acquired the Peachtree Business Management System line of micro software, which had been mar-keted through MSA's Peachtree Software International Ltd. subsidiary. An MSA spokesman said the move represents a "gradual closing down" the London-based international arm of Peachtree and the sale of its products. He would not disclose the financial aspects of the agreement.

The termination of the interna-tional division leaves only Peachtree's domestic operations division — the Peachtree Software, Inc. sub-sidiary of MSA — on the selling block. MSA announced in October [CW, Oct. 22] that it would sell all four divisions of its packaged micro software operation. In January, [CW, Jan. 14] MSA, headquartered here, announced the sale of the Microcomputer Distribution Division to Corporate Software, Inc. of Waltham, Mass., for an undisclosed sum. Last month, MSA sold the educational division, made up of its Designware, Inc. and Eduware, Inc. subsidiaries, to Encyclopaedia Britannica, Inc. ICW. March 41

The spokesman said MSA expects to make an announcement soon regarding the sale of the Peachtree Software subisidiary.

> AT A GLANCE MANER

#### 77

The move into CPE sales. which most of the seven regional holding companies claim will never include mainframe sales, creates new opportunities for vendors. It also has left one significant vendor largely out in the cold - AT&T

For U.S. West, which is considered one of the most aggressive regionals in terms of new ventures, CPE sales have been limited to PBXs and IBM

and Grid Systems Corp. personal computers.

But the regional has gone beyond its own boundaries to plan cellular telephone systems in Costa Rica and for companies operating in the Gulf of Mexico area and to install communications systems for the U.S. government on the East

Coast. U.S. West also plans to develop and manage real estate nation-

Nynex Business Information Systems and Pacific Telesis Group's (Pactel) Pactel Communications Sys-

#### AT A GLANCE

Operating Companies: Southwestern Bell Telephone Co.

(Mo., Kan., Okla., Ark., Texas)

Subsidiaries: Southwestern Bell Telecommunications, Inc. (CPE\*); Southwestern Bell Mobile Systems, Inc. (cellu-

lar); Southwestern Bell Publications, Inc.
Number of Employees: 71,000
1984 Revenue: \$7.2 billion
1984 Earnings: \$883.1 million (\$9.04 per share)

#### Products and Services

Switches and American Telecom, Inc. Focus private branch exchange Northern Telecom, Inc. SL-1 and SL-100 PBX Telephone Equipment Tie Communications, Inc. Datastar PBX NEC America, Inc. telephones Intecom, Inc. PBX Office Equipment Northern Telecom workstations

Multiplexers and Modems **IBM** modems

Southwestern Bell Publications' subsidiaries market Yellow **New Ventures** Pages advertising, specialty directories, catalogs, commercial printing and direct-mail service. Three-year, \$900 million billing contract with AT&T. Cellular mobile telephone projects in Dallas, St. Louis and Kan-

> Cellular resale contracts in Houston, Miami and Los Angeles. Digital Link Services marketed to business and residential cus-

#### NYNEX CORP.

Operating Companies: New York Telephone Co.; New England Telephone Co.

Subsidiaries: Nynex Business Information Systems (CPE\*); Nynex Mobile Communications Co. (cellular); Nynex Information Resources Co. (publishing)

Number of Employees: 95,000 1984 Revenue: \$9.5 billion 1984 Earnings: \$986.4 million (\$10.10 per share)

#### Products and Services

Switches and Intecom, Inc. private branch exchange Telephone Equipment GTE Business Communications Systems, Inc. Omni Tie Communications, Inc. Datastar, Delphi BK and Delphi BX Standard Telecommunications, Inc. Marketphone AT&T Merlin telephone system Northern Telecom, Inc. Vantage key system Data General Corp. personal, mini- and superminicomputers and software, including DG Comprehensive Electronic Office Office Equipment

IBM, Wang Laboratories, Inc. and Compag Computer Corp. per-

NEC Information Systems, Inc. and Mannesman Tally printers

Multiplexers and Modems General Datacomm Industries, Inc.

sonal computers

**New Ventures** 

Cellular mobile telephone service in New York, Boston and Buffalo. N.Y.

Joint sales force markets for CPE, Centrex and dial-tone. Datago retail computer stores

Nynex Information Resources plans nontraditional directories.

#### AT&T promotes secondary market for used equipment

By Peter Bartolik

BOCA RATON, Fla. — AT&T Information Systems needs help establishing a secondary market for used telecommunications equipment as it prepares to turn over its large embedded base, a company executive told members of the Computer Dealers and Lessors Association (CDLA) here recently.

Robert J. Casales, executive vicepresident of strategic and financial planning for AT&T Information Systems, keynoted the spring conference of the CDLA. An hour later, it was announced that AT&T Credit Corp. had been elected an associate member, becoming the first "captive credit corporation" to join the CDLA.

AT&T Information Systems last year announced an agreement with CDLA member CMI Corp. under which CMI assumed the role of consultant to AT&T in establishing a third-party dealer network.

CDLA from page 123

bers were informed that the CDLA's board of directors had not accepted a legislative committee recommendation to continue pressing for a three-year accelerated cost recovery system (ACRS) schedule for computer equipment. Under current ACRS rules, computer equipment is depreciated over a five-year period.

Bouldin said in an interview with

Bouldin said in an interview with Computerworld that he met with Treasury Department officials late in February and that they indicated a willingness to modify the eight-year real cost recovery system contained in the flat tax proposal. Treasury Department officials, Bouldin said, "want a fair system that has no tax incentives nor disincentives to do leasing."

leasing."

The CDLA board has adopted the position that it also wants "a taxneutral leasing environment" in which tax policy promotes economic development. Current policies concerning leasing have been criticized by government officials as promoting tax shelters, and such tax-advantaged leases are being scrutinized by the Internal Revenue Service.

Bouldin said his committee was not able to make a recommendation on the investment tax credit because the CDLA members are widely divided on the issue.

Some CDLA members who attended the closed-door session said afterwards that both depreciation schedules and the investment tax credit prompted heated discussion from members frustrated by the board's apparent turnaround on tax policy issues.

The statement mailed to members said that the board indicated at a January meeting that neutralizing tax benefits of leasing "would eliminate a lot of unknowledgeable competition from the monkettelaem".

tition from the marketplace."
According to the statement, the board indicated at that meeting that supporting repeal of the investment tax credit and accepting a lengthier depreciation schedule would be in their best interests.

Regardless of what comes out of the Treasury Department, Bouldin said, the final battle will be decided on the floor of Congress.

Casales said AT&T "has a large embedded base of telecommunications equipment that in the next few years will move to new technology." He told CDLA members, "I look to you for help in developing a secondary market for used telecommunications equipment."

#### 'Service capabilities'

He said AT&T will support dealers of used equipment with "service capabilities that can be supplied to their customers."

There are no plans for AT&T's direct sales force to sell used equipment in competition with third-party dealers, Casales said. "If used equipment is sold into an [AT&T] sales-

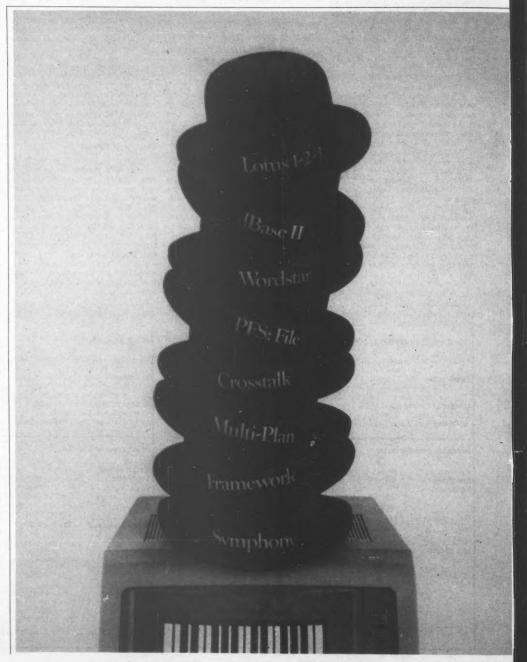
man's territory, he will be compensated [by AT&T]," Casales said. While AT&T Credit poses a poten-

While AT&T Credit poses a potential competitive threat to many CDLA members engaged in financing equipment purchases and leases, Casales pledged that AT&T "will look for the balance" to satisfy both parties.

Casales also pledged that AT&T will not undercut dealers of its used equipment by cutting prices of new equipment.

With CDLA members dealing mainly in IBM equipment at present, IBM price cuts on new equipment are a constant source of anxiety as they drive down the residual, or resale values, of used equipment. . He also predicted that residual values of telecommunications equipment will not experience the "rapid decay" of used computer equipment residuals.

Regarding AT&T Information Systems' product strategy, Casales noted that the market for PBXs and other switches "is fundamentally a replacement market similar to the mainframe market." That reality is driving the telecommunications giant into growth areas, he added. Noting that AT&T has no intention at this time of competing with IBM in the mainframe area, he said that the company will focus on distributed processing equipment and intelligent workstations.



#### Berger Lahr files suit charging Seagate with fraud, negligence

JAFFREY, N.H. — Berger Lahr Corp. said it has filed a \$10 million suit against Seagate Technology Corp. and one of its executives, claiming fraud, negligence and breach of contract.

The suit, filed in the U.S. District Court for the Northern District of California, stems from a series of contracts between the two companies dating from 1983. Berger Lahr claims that Seagate reneged on agreements

calling for Seagate to purchase a specified number of stepper motors specific prices. Berger Lahr had been a major sup-plier of stepper motors — a component of disk drive systems gate, a Scotts Valley, Calif., manufacturer of computer storage devices

Seagate had accounted for more than half of Berger Lahr's business, according to William Hutchinson, president of Berger Lahr. Hutchinson said Seagate is now buying stepper motors from a Japanese manufactur-

A spokeswoman for Seagate said the company would not comment on the litigation.

No estimate of the value of the contracts involved in the suit was available from Berger Lahr.

#### Signetics to cut work force

By Kathleen Burton CW West Coast Bureau

SUNNYVALE, Calif. -- Reacting to the semiconductor industry's continued slump, Signetics Corp. announced recently it will reduce its 6,300-person U.S. work force by up to 400 employees, adopt a shortened workweek and temporarily shut down some plants by the end of

The semiconductor manufacturer said it will use a combination of attrition and layoffs to cut its manufacturing work force at plants here and in Orem, Utah, and Albuquerque, New Mexico.

The company will implement fourday workweeks on alternate weeks from March 15 to June 10 for all nonmanufacturing employees, according to Ron Deutsch, a company spoke man. Employees will have to use 10 vacation days during that period. In addition, the company will shut down some plants for one- or twoweek periods beginning April 1, but it has not yet determined which plants will be closed or how many reductions will be layoffs, Deutsch ex-

#### Overseas layoffs possible

Signetics, with 12,000 employees worldwide, has test and assembly operations in Thailand and Deutsch said that the possibility of overseas layoffs are also being con-

Signetics, the sixth-largest U.S. supplier of integrated circuits, said the measures were designed to reduce expenses because of a soft semi-conductor market created by excess customer inventory, a shaky personal computer market and excess capacity among semiconductor manu-

Since September, the company has reduced its worldwide work force from 12,600 to 12,000 through rough attrition and layoffs. The latest proposed cutback would leave Signetics, wholly owned subsidiary of N.V. Philips, w worldwide. with 11,600 employees

The move follows similar cost-cutting plans implemented by Intel Corp., Texas Instruments, Inc. and other semiconductor manufacturers.

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SOFTCON Booth #2721.

#### Bay area water threat cited

SANTA CLARA, Calif. - Silicon Valley environmentalists charged that a California water board's decision in late February has acted as a signal to IBM and other multinational conglomerates that it is all right to pollute San Francisco Bay area water supplies.

The San Francisco Bay Regional Water Quality Control Board decided not to ask the state's attorney general to prosecute IBM for discharging toxic chemicals at its South San Jose

Several local environmental groups and governments, including the city of San Jose and Santa Clara County, are protesting the decision, claiming that the board's message will give other companies the message that the penalties for toxic spills are lenient.

Ted Smith, chairman of the Silicon Valley Toxics Coalition, one of the protesting groups, said "We are afraid this may start a dangerous precedent." Smith said the board's vote eliminated an opportunity for the state to collect between \$8 million and \$45 million in penalties from IBM that could have been used to mitigate the effects of the spill.

At the February hearing, IBM representatives said that IBM had spent \$34 million on cleanup and preventive measures since the leak was discovered in 1978 and expected spend \$11 million more by the end of

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#### U.S. chip makers to save in wake of Japanese tariff lift

By Kathleen Burton CW West Coast Bureau

MENLO PARK, Calif. — Following two years of negotiations, Japan and the U.S. are eliminating their tariffs on semiconductor imports, opening the way, officials said, for savings of up to \$100 million a year for the U.S. semiconductor industry. According to Shellah Sandow, communications manager for the Semiconductor Industry Association (SIA), a trade organization based in San Jose, Calif., elimination of the 4.2% semiconductor import tariff will let U.S. chip manufacturers enjoy large savings. A large portion of U.S.-manufactured integrated circuits, Sandow said, are shipped overseas for as-

sembly and packaging and are taxed on reentry into the U.S. The 4.2% value-added tax generally amounted to about 30% of the chip's total cost, Sandow said.

Sandow said that in 1985, American semiconductor manufacturers will do approximately \$9 billion worth of business in the U.S. that, with the tariff in place, would have cost them nearly \$100 million in import duties.

Most chip makers view the tariff elimination as a positive first step in lowering trade barriers between Japan and the U.S. "We welcome the tariff reduction," said Linda Baker, a spokeswoman for National Semiconductor Corp. in Sunnyvale, Calif. National Semi, which recent-

ly ended a two-week production slowdown, will save several hundred thousand dollars a month under the new system, Baker said.

According to Robert Pearlman, director of tax and customs at Intel Corp. in Santa Clara, Calif., removing the tariff will save Intel millions of dollars each year on chips imported from the company's offshore assembly facilities and on chips exported to Japan. Pearlman said, however, that the tax reduction is not substantial enough for Intel to open more production plants overseas.

#### Won't help in Japanese market

The deputy director of the U.S. Department of Commerce in San Francisco, George Dolan, said that eliminating the import tariff will not help U.S. chip manufacturers compete in Japan's \$8 billion semiconductor market, where the U.S. currently has a 10% market share.

"While this is a step in the right direction," Dolan said, "Japan has many nontariff barriers, which, while less obvious, still serve as barriers to open trade."

Dolan said the Japanese stumbling blocks include a "buy Japanese" mentality promulgated by Japan's influential Ministry of International Trade and Industry and Japan's excessive use of paperwork, import certificates and export licenses to delay chip exports.



Western Digital Corp. announced revenue for the second quarter of \$38.4 million, compared with \$23.6 million in the same period one year earlier. Profits were \$2.8 million, or 15 cents per share, compared with \$1.6 million, or 11 cents per share in the like period last year.

Quantum Corp. reported revenue for the third quarter of \$31.7 million, compared with \$17.5 million in the comparable quarter one year ago. Profits were \$5.9 million, or 62 cents per share, a 106% increase over \$5.9 million, or 30 cents per share, last year.

Daisy Systems Corp. announced profits for the first quarter ended Dec. 31 were \$4 million, or 25 cents per share, compared with \$2.3 million, or 15 cents per share in the like period one year earlier. Revenue was \$25.5 million, up from \$13.1 million for the comparable quarter last year.

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#### TAXES from page 123

posals being considered in Congress are "neither fair, nor simple nor flat."

A fiscal conservative who serves on the Senate Budget Committee, Johnston offered his view of attempts to modify the maze of tax laws. "Anytime somebody starts put-ting 'fair' or 'reform' on a tax bill, it means new taxes," he noted.

Despite the coalition of liberals and conservatives supporting some form of tax simplification, Johnston said, the elimination of various tax incentives will foster too much opposition from groups that benefit from particular incentives. "There will be enough special interests that oppose the flat tax), that it won't get off the ground," he predicted.

The CDLA spent part of its meet-

ing developing a strategy for approaching the tax simplification proposals. However, recent developments seem to indicate that the governing board of the association sees the tax revision process as an opportunity to deter further competition rather than an opportunity to foster an open economic environment (see related story above).

According to Johnston, who strongly urged cutting Social Security and Defense Department budgets to fight the federal budget deficit, there is a need for tax reform, but it should be a surgical reform rather than a blanket reform. "We need to go about this provision by provision and change those [incentives] that have outlived their usefulness and change those that are too generous,"

Another third-party market association, the American Society of Computer Dealers (ASCD), had little sympathy for IBM's recent attempts to close down the "gray market" for discounted IBM equipment that reportedly is fed by value-added dealers and resellers unloading portions of their official IBM quotas.

In a recent meeting, the ASCD is-sued a formal statement charging that the use and marketing of gray market equipment is "a result of IBM's discriminatory policies and/or practices surrounding the selection and approval of firms that are al-lowed to purchase IBM equipment at a discount from IBM."

CDLA sources said that association representatives met with IBM late in January and complained that the Sierra mainframe product line was the "most preannounced, unannounced" product IBM has ever brought to market.

The CDLA also reportedly told IBM that if IBM Credit Corp. is as aggressive in its pricing of the Sierra product line as it has been with leasing IBM 4381 machines, the thirdparty equipment market would be unduly harmed.



'Honey, the computer fired the boss

#### Acquisitions, mergers at all-time high

FRENCHTOWN, N.J. - Acquisition and merger announcements in the software, computing services and information industries in 1984 set all-time highs, with more than 10% of the computer industry changing hands, according to the Cerberus Group's annual report.

Acquisitions and mergers soared to 256 transactions, up 80% from the previous year's 142, according to the 1984 "Cerberus Report." The total dollar volume paid for all transactions that provided purchase prices hit \$4.3 billion in 1984, an increase of 351% over 1983 — a new record for the industry — the report said.

Of that total, 10 computing industry deals accounted for \$3.6 billion,

which is approximately 85% of the total value paid for all 1984 transactions, the report said. The General Motors Corp. acquisition of Electronic Data Systems Corp. (a more than \$2.5 billion purchase) and McDonnell Douglas Corp.'s acquisition of Tymshare, Inc. (a \$307.5 million purchase) represented 78% of the large transactions' value and 66% of the total value paid.

According to the report, the number of transactions in the computing industry decreased from 188 in 1982 to 142 in 1983 and increased to 256 in 1984. The total dollar volume climbed from \$660.1 million in 1982 to \$956 million in 1983 and jumped to \$4.3 billion in 1984.

The 1984 "Cerberus Reports" which includes a copy of the 1983 report, will be available in late March at a price of \$375.

For those transactions where offer prices were disclosed, the average price was approximately \$17 million, a spokesman said. However, if the "megadeals" were removed from the figures, the average would be closer to \$7 million, he said.

The "Cerberus Report" is a combi-

nation of information garnered by the Cerberus Group and by W. T. Grimm & Co. of Chicago.

More information can be obtained from the Cerberus Group, Chestnut P. O. Box 470, Frenchtown, N.J.





Computer Sciences Corp. reported a profit of \$12.4 million, or 90 cents per share, for its third fiscal quarter, compared with \$4.2 million, or 30 cents per share, in the same quarter one year earlier. Revenue was \$178.7 million, compared with \$168.5 million last year.

Computer Associates International, Inc. announced revenue of \$38.7 million for the third quarter ended Dec. 31, an increase of 49% over the \$26 million in the same period last year. Profits were \$6.2 million, or 58 cents per share, compared

with \$4.6 million, or 43 cents per share, in the same period one year ago.

Ungermann-Bass, Inc. reported fourth-quarter revenue of \$15.2 milion, up 83% from \$8.3 million in the same quarter one year earlier. Profits were \$6.2 million, or 38 cents per share, compared with \$1 million, or 6 cents per share, in the corresponding quarter last year.

Seagate Technology, Inc. reported revenue for its second fiscal quarter of \$51.7 million, compared with \$50.6 million in the comparable period one year earlier. Profits were \$230,000, or 1 cent per share, compared with \$9.5 million, or 22 cents per share, for the same period one year ago.

Computer Automation, Inc. reported a net loss for the second quarter of \$2.3 million, or \$1.15 per share, compared with a net loss of \$1.5 million, or 77 cents per share, in the same period one year earlier. Revenue was \$12.6 million, compared with \$14.7 million last year.

NBI, Inc. announced revenue for its second quarter was \$49.2 million, up 10% from \$44.7 million reported for the comparable period last year. Profits were \$3 million, or 33 cents per share, compared with \$3.3 million, or 33 cents per share, in the same quarter one year earlier.

Printronix, Inc. reported profits of \$1.2 million, or 26 cents per share, for the third quarter ended Dec. 28, compared with \$1.8 million, or 40 cents per share, in the same quarter

last year: Revenue was \$40 million, compared with \$31.4 million in the comparable period one year earlier.

Computer Task Group, Inc. announced revenue for the fourth quarter of \$24.7 million, compared with \$16.1 million in the same period last year. Profits were \$714,000, or. 34 cents per share, compared with \$379,000, or 19 cents per share, in the same quarter one year earlier.

Ask Computer Systems, Inc. reported that profits for the second quarter ended Dec. 31 increased 12% to \$2.1 million, or 18 cents per share, compared with \$1.9 million, or 16 cents per share, in the same period one year earlier. Revenue increased 41% to \$21.2 million, compared with \$15.1 million for the same quarter one year ago.

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#### SPERRY from page 123

of its vast conglomerate in an effort to raise cash to buy into the minicomputer and office automation arenas.

"ITT decided it has to get into the computer market [somehow], and the quickest way to do it was to buy another company," noted Maureen Fleming, an analyst with International Resource Development Corp., a Norwalk, Conn.-based research firm. She said ITT will probably seek another acquisition from among minicomputer firms, which Wall Street analysts said are undervalued on the stock markets.

Bob Djurdjevic, president of Annex Holdings Corp. and editor and publisher of the "Annex Computer Report," said the would-be merger was a "nonevent" for the IBM and plug-compatible systems market, but he added that it would have provided benefits to both Sperry and ITT.

Djurdjevic said ITT would have gained technological benefits, which Sperry, which has a variety of enterprises outside the computer industry, would have gained a larger R&D budget. He noted that IBM spent \$3.15 billion on R&D in 1984, a level that would rank just its R&D functions among the revenue scale of the top 10 computer companies.

"Clearly, if [IBM competitors] are to continue to grow, they have to continue to pool resources to match [IBM] strength for strength," he said.

strength for strength," he said.
Although neither Sperry nor ITT
would comment on the financial
terms of the negotiations, published
reports said Sperry was seeking a
stock exchange valued at \$3.3 billion,
which would have exceeded by far
General Motors Corp.'s \$2.2 billion
acquisition of Electronic Data Systems Corp. last year.

Peter Hynes, a Sperry spokesman, said that despite the announcement, "there is not a 'for sale' sign up at Sperry." He added that Sperry management had previously indicated interest in exploring opportunities for expansion. The two companies, he said, are continuing discussions on the possibility of joint marketing and technology transfers. Hynes said that discussions of those other possibilities led to the merger talks.

According to Charles Varga, chairman and publisher of the Cerberus Group, which monitors acquisitions and mergers in the information industry, the pace of mergers and acquisitions could pick up this year and next if the economy experiences a downturn or a slight recession.

#### APPLE from page 123

was a major mistake. "It's just not in line with the outside world's thinking," Wozniak said.

David Larson, former Apple IIe and IIc marketing manager, left the company in February after four years. A major factor in his departure, Larson said, was his disenchantment with "Apple's total emphasis on Macintosh and the business market."

According to Larson, it is becoming more difficult for entrepreneurial people to operate in Apple's increasingly bureaucratic structure. Apple is importing consumeroriented specialists from othcompanies, which diluting the culture and narrowing the company's engineering and marketing focus to business-oriented products like the Macintosh, he

Another blow to company morale, according to Larson, is Wozniak's departure. "It'll take the edge off the [Apple IIe] team," he said. Peter Quinn, hardware de-

sign manager for the Apple Ile and engineering director for the Apple IIc, left Apple several weeks ago after four years with the company. Quinn said the company is "deliberately antagonizing its best talent." He said Ap-ple Chairman Steve Jobs and Apple IIc General Manager Del Yocam's orientation on bottom-line profits and low

head count are escalating frustrations. "The whole company is a ball of frustration now," Quinn said.

Taylor Pohlman, president of sales at Fore-thought Corp., a software manufacturer in Mountain View, Calif., was on the ground floor of the Apple IIe when it began 1980: Pohlman said that with Apple's new business image largely a result of trying to Wall Street expectations, the entrepreneurially

oriented "get-it-done people like Dave Larson" are being pushed out.

The company is underutilizing and not rewarding the people who've made things happen in the past," Pohlman said. He noted that Apple was built on the premise that individuals can make a difference. "That's not true today," he said. Matthew Meehan, a com-

puter industry analyst at the investment banking firm Sal-omon Brothers, Inc. in New York, said the changes at Apple "are what Apple needs; they make sense organizationally." Wall Street is not driving the changes at Apple, Meehan said, because "Wall Street thinks in the short term, and Apple can't afford to respond to short-term needs."

Meehan said Apple's strategy shift to the business marketplace has made the company aware of its need to recruit outside talent and to narrow its product line. "The computer industry is just like the auto industry," Meehan said. "The Henry Fords do well at first, but then you need the Lee Iacoccas to sell the widgets, to use marketing and advertising and to sell to a different kind of custom-



OMS, Inc., Mobile, Ala., acquired privately held Concept Technologies, Inc., headquartered in Portland. Ore. Terms of the acquisition were not available.

BKW, Inc., Nashua, N.H., announced that it has terminated its plan to acquire the Berton Group, a Californiabased resources and technolmanagement company. BKW said the Berton Group had not met all of the terms and conditions spelled out in the original letter of intent between the two companies.

Informatics Corp. acquired the litigation support services business of Litton's Mellonics Systems Development Division, Sunnyvale, Calif. Under the agreement, Informatics will assume responsibility for litigation support services contracts and projects currently performed and managed by Mellonics.

Informatics has also acquired Software Technology, Inc., a Portland, Ore.-based software firm. Informatics also sold its life insurance systems business to the Continuum Co. The sale includes only the life insurance systems business with a revenue of approximately \$25 million for the preceding 12 months.



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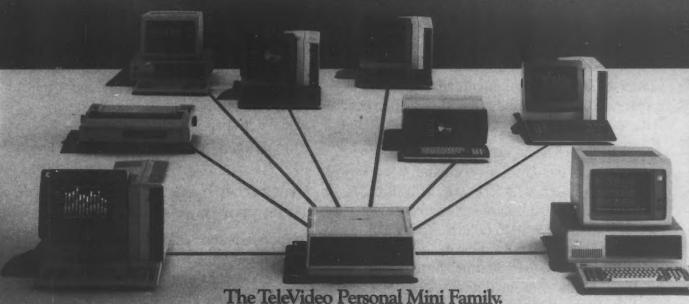
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tions. The Department offers a BS/BA degree. Courses currently offered include data elucidate trues, architecture, artificial intelligence, pro-gramming languages, simulation, graphics, structured and structured artificial intelligence, structured in the structure and structured structured and structured artificial structured structured and structured artificial structured 4341 and two PDP-11770s. Currently there are SDI Computer Solonica regions; there are are SDI Computer Solonica regions; there are the University has a \$250,000 fund which is used to support research locally. There are

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- Tools and Development

   Provide technical leadership to a small group of
- r rovide technical leadership to a small group of people

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  \*Responsibilities include tools selection, tracking, high-level design, lab layout and management, and more

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   Provide design and technical leadership for implementation of composition systems in Unix

- environment

  Be a technical resource for composition-related, project-wide engineering issues

  Have familiarity with interactive composition and solid knowledge of traditional embedded code
- composition

  Must have Unix\* and "C" experience

  Requirements are a BSCS plus a minimum of 8

  years industry experience in application design
  and at least 3 years composition front-end

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### Editor

- Supervise daily activities of a small group of programmers

  Develop high-level and detailed design specifications for the editor

  Familiarity with interaction of an editor and composition height of the difference of the design specific and "C" experience

  Requirements are a BSCS plus a minimum of 5 years' industry experience with 2 years of editor-related work

# SOFTWARE ENGINEER

### User Interface

- ergonomics

  Analyze user interface functional specifications

  Analyze user interface functional specifications

  Must have expertise in programming a windowbased environment in Unix " and "C"

  Experience with traditional and computer
  graphics is desirable

  Must have experience in general workstation development with Unix " ("C"

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### HARDWARE ENGINEER

- Analyze and assess hardware options and require-ments for interactive graphics workstation.

  Determine cost/feasibility of optional graphics processors, floating point options, on-board graphics primitives, and more.

  Oversee the design of hardware and lowest level firmware, as well as microcode applications for graphics, fonts, and peripheral interfacing, supply of the processors of the processor of the processor of the Handle-on expellications is necessary.

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(If you write, please include your title.)

### TEXAS/OKLAHOMA

Programmer/Analysts — HP3000 Several expanding businesses in West Texas have created new opportunities for people with HP3000 COBOL experience. Quality business environments for topnotch professionals. Micro-computer experience helpful. To \$28,000.

Telephony/Data Communication Sales Sell state-of-the-art telephony and data communication equipment to South Texas firms. Experience in selling related products and a proven track record are vital. Learnings of \$50,000 to \$90,000 per year can be expected.

can be expected.

Software Engineer Excellent opportunity to research and develop new microprocessor products for major vendor in 
Houston. A degree in either Ed or CS 
sought as well as experience in one or 
more of the following: hardware/software 
device drivers, peripheral interfaces, 
teleprocessing control software. Assembly, or 'C'. To \$50,000.

Systems Analyst Assume total responsibility for designing and developing new data communications network. Solid technical background in developing data transmission networks needed. Houston, Texas. To \$55,000.

Programmer/Analyst and Project Leader Leading energy firm is expanding its corporate data center in downtown Houston. Development opportunities exist for person with two or more years of OS/COBOL experience with some exposure to a major DBMS. Energy applications experience is not required. To 3 40,000.

Systems Analyst, Database Analyst and Sr. Programmer/Analyst Suburban Fortune 500 company in Houston is staffing for mainframe development projects on financial systems using COBOL and IDMS. To \$45,000.

Scientific Programmer Excellent development opportunity in an R&D environment in North Houston. Seek FORTRAN experience under RSX or VMS. To \$35,000.

HP 3000 Programmer/Analysts — Become a Senior P/A. Multiple positions available with successful manufacturing organization located in southwest Houston. Knowledge of FORTRAN and COBOI. on a mini-computer system sought. Manufacturing systems exposure essential. To \$37,000.

Systems Engineer — New Product Development New PC product line is being developed by this major hardware vendor in Houston. Experience with hardware/software interfaces, telecommunications and operating systems is vital to this research and development effort. Convenient suburban location.

ORACLE Database Expert Growing energy corporation in Houston is expanding its data processing function to include multiple machines and operating systems. This is an excellent opportunity to broaden your hardware/software expertise. To 442,000.

Software Engineer — Technology Leader Dallas office of Fortune 500 firm, in new facilities on a campus-like setting, seeks Software Engineer to develop microcomputer software on Intel 8085, 8086 and 8088 processors. Real-time operating system and communications software. To \$41,000.

Programmer/Analysts — IMS DB/DC Projects Corporate staff of a rapidly expanding Fort Worth Fortune 500 organization has an immediate need for an experienced professional with a strong OS/COBOL background. All application projects are new and involve IMS DB/DC development. To \$32,400.

Senior IMS Systems Programmer— New Data Center New IMS development requires IMS internals Software Programmer with four or more years of experience, Prefer IMS 1.3, MyS and CICS internals. Key position in Dallas. To \$48,000 CAD/CAM Software Developer North Dallas, state-of-the-art manufacturing firm developing VAX and Micro CAD/CAM systems for new products seeks software professional with PASCAL and VAX exposure. To \$38,000.

exposure. To \$38,000.

Data Base Analysts — Advanced
Technology Headquarters of world-wide
high technology firm based in Dallas seeks
several IMS DBA's for several applications
groups (manufacturing, financial) and the
newly formed Central Advanced Technology
Group. Will determine data base/
communications direction for the next
ten years. To \$50,000.

Lead Systems Programmer — CICS or VTAM Major Dallas-based distributor seeks OS/AVS Systems Programmer with either CICS or VTAM expertise to supervise small group of technical support software people. New facilities, excellent growth potential. To \$40,000.

RPG III Programmers — High Growth One of the top five real estate developers in U.S. will double their data processing organization in 1985. RPG III and Financial applications experience sought. To \$54,000.

10 524,000.

EDP Auditor — Energy Corporate headquarters of major manufacturer seeks EDP Auditor to be senior person in growing organization. Three years background in EDP or accounting desired. IBM environment preferred.

Banking Programmer/Analyst — Major Expansion Major Oklahoma bank with beautiful facilities needs professionals with a minimum of two years IBM COBOL experience. To \$39,000.

Mini-Micro Programmer/Analysts— Major Expansion Prestigious Okiahoma based corporation has embarked upon a major new systems development effort and seeks professionals with a minimum of two years programming experience on HP 3000 with some knowledge of communications. To \$35,000.

Minicomputer — Systems Engineer Successful minicomputer vendor in Oklahoma City seeks an experienced VAX VMS COBOL Programmer with three or more years experience. Position provides a dynamic work environment with excellent benefits. To \$35,000 + car.

Geophysical Programmer/Analyst — New Development Fortune 500 Company in Tulsu is Implementing a major dat center expansion. Ground floor opportunity to develop new systems and work with dynamic management. To \$39,000.

Milloy hanne management. 10 375,000.

Major MIS Expansion — All Levels
Fortune 200 organization in Oklahoma
City has committed to major MIS expansion. State-of-the-art large scale IBM and
CICS-environment offers exceptional
lateral and vertical career growth. Professionals needed at all position levels.

To \$45,000.

Programmer/Analysts — Learn CICS/ DL/I Rapidly expanding Arkansas corporation seeks experienced OS/COBOL. Programmer/Analysts. Manufacturing applications preferred. To \$28,000.

# NEW MEXICO/ARIZONA

Software Engineers — Mini/Micro Stable, growing division of Fortune 500 firm seeks person to lead hardware/ software integration projects with DEC PDF11 and 280 microcomputers using ASSEMILER and C. Will be heavily involved with hardware interface, design development, and test. Lead small groups – project start to finish. To 839,000.

project staft to Inish. To \$39,000.

Software Engineers/Managers — WIII
Cross-Train High-tech electronic systems
manufacturer is expanding staff for new
development in UNIX/Co no 808X,
MG8XXX microprocessors. Real-time
operating systems, compliers, hardware
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specialists are needed. Can train solid
PASCALASSEMBLER experienced on
UNIX and C. Prefer BSE or Technical
BSCS degree. Excellent company benefits
and relocation. Starting salaries: \$31,000
to \$65,000.

MVS/XA Systems Programmer Multiple 3084 data center in Phoenix seeks senior MVS/XA Systems Programmer. State-of-the-art IBM data center with communications to other data centers worldwide. Experience in project management for large systems integration preferred: To 345,000.

preferred. 10 avayants Programmer/Analyst Fast-growing, stable company in new Scottsdale, Arizona facility. Design and program using CICS, COBOL and ALC. Minimum of two years IBM sought. IMS Database experience preferred. To \$31,000.

Programmer/Analysts — IMS/Iraining Fortune 100 client has major new development projects. State-of-the-art OS/MVS slop with professional environment, slop with professional environment, Analysts with two years or more experience using IMS DB/DC with COBOL sought. Also have development with PLJ and CICS for new on-line transaction system. Excellent training programs, benefits and career progression. Starting salaries: \$22,000 to \$39,000.

Programmer/Analysts — 20 minutes from the Slopes Major services firm needs Programmer/Analysts to support new system upgrades in 1985. OS/MVS, CICS COBOL environment. Opportunity to enjoy the outdoors and live in a low cost-of-living area at the base of the Rockies. Starting salaries: \$25,000-829,000.

8-25,000-829,000.

Programmer/Analysts — Systems 34, 36, or 38 Exciting opportunities in new development of financial and reporting systems for nine year old Phoenix firm. Professional staff has tripled in the last two years. Multiple CPU's installed migrating from System 34 to System 36 or 4300 as demand increases. Prefer some communications experience with Remote Systems. Starting salaries: \$20,000 to \$25,000.

Senior Programmer/Analyst — Bankling. Lead installation of new commercial loans package for state-of-the-art bank. Beautiful suburban Phoenix location. Prefer commercial loans experience and/ or strong IMS with COBOL. Banking and ALC preferred but not required. Excellent path to Project Management. To \$34,000.

# COLORADO

Os/MVS — Data Center Expansion Rapidly expanding Denver division of major U.S. corporation seeks individuals with strong exposure to Os/MVS systems programming. Expansion plans for 1985 will create multiple opportunities for rapid career development. To \$39,000.

rapid career development. To \$39,000. Senior COBO. Programmer — HP New Development Exclusive Source client seeks a COBO. Programmer Analyst to join a select staff of computer for the computer of the computer firm offering a plush working environment, outstanding benefits and rapid career growth, including 2 90 day salary review. One year of HP COBO. Lapplications experience sought. Knowledge of packaged GJt. systems helpful. To \$33,000.

Assembler Programmer — Learn CICS Prestigious Denver firm with sophistic cated network expansion plans for 1985 is seeking IBM Assembler Programmers. Promotion to first line management is attainable in 12-18 months. Two-five years of BAL on large IBM systems sought. On-line training will be provided. To \$39,000.

Applications Programmer — Learn CICS Denver-based financial organization is expanding its MIS staff to keep pace with growth. Training in CICS will be provided for candidates with two or more years of COBOL experience on large-scale IBM systems. To 835,000 at 100 per page 100 p

Sales Representative — New Branch Leading company in computer services technology is opening a new branch in Denver. They seek a self-motivated seniolevel sales professional to establish and build the Rocky Mountain market. Package to \$50,000. Programmer/Analysts — Nationwide Travel Major international consulting firm in Colorado offers outstanding opportunities throughout the United States. Training programs are exceptional as are relocation benefits. Benefits include a tuition refund program and a liberal vacation policy. Openings exist at all levels. OS or DOS COBOL or PU1, CICS, IMS, IMMS, RPG III and Series 1 experience sought. In \$55,000.

Applications Programmers — New Systems Development Major insurance organization in Denver has multiple positions open due to expansion. Company is developing a new insurance processing system. Participate in a stateof-the-art on-line development project. Prefer background in insurance and IBM Assembly. To \$38,000.

Branch Manager — New District Office Fastest-growing data base software firm in U.S. is expanding into the Denver area. Seeks manager with a solid sales track record in systems software or data base packages. Package to \$100,000 plus.

base packages. Fackage to \$100,000 pine Systems Software Programmer— Foot of Pikes Peak Dynamic Colorado Springs national firm is expanding its Systems Department. Professional with three years OS Assembler sought. Full relocation package. To \$42,000.

# SOUTHERN CALIFORNIA

PASCAL Programmer/Analyst — Process Control Opportunity for experienced PASCAL Programmer to work on real time process control applications for software development firm in San Diego. To \$33,000

Micro Programmer/Analysts — Leading Firm San Diego-based company, a leader in its field, needs Assembly Language Programmers to work on videographics, real time software and software utility development. To 385,000.

RPG II Programmer — Learn RPG III International transportation company in San Diego seeks an experienced RPG II Programmer. Will gain experience in RPG III on a S/38. To \$25,000.

III on a x/58. To \$25,000.

Financial Systems Analyst Rapidly expanding financial institution is seeking a computer professional with solid systems analysis ability who has served as a Project Leader. Experience in on-line systems in BM COBOL and Assembler environment is highly preferable. Eacility is located in one of the most beautiful sections of San Diego. To \$30,000.

IBM Systems Programmer — Customer Support A national computer manufacturer is seeking several additional Systems Programmers to staff their growing San Diego facility, individuals with experience in IBM DOS or OS operating systems preferred. To \$35,000.

MYS Systems Programmer Large San Diego-based organization seeks a professional to assist in the upgrade to MYS utilizing multi-CPU's and a large network of terminals. The company is one of the most stable organizations in the San Diego area, yet one of the most progressive in keeping up with state-of-the-art technology. To 435,000.

Graphics Programmer/Analysts One of San Diego's premier graphics software firms has several positions available for individuals with a background in FORTRAN. To \$32,000.

MIS Manager Progressive firm seeks a proven Manager capable of building a data processing organization. Will set direction for successful and growing firm. Suburban Los Angeles community. To \$42,000.

Senior Minicomputer Systems Programmer Manufacturing company headquartered in San Diego seeks an experienced PDP-11 Programmer who has worked on RSX-11M. Will be involved in a major effort to develop a state-of-the-art real-time system. To §32,000.

On-Line Programmers — OS Environment Major San Diego-based organization has several openings for On-Line Programmers to participate in a system utilizing a large network of terminals tied to one of IBM's latest computers. Selected candidates will work in an OSAWS CICS, IMS environment. To \$35,000.

Minicomputer Programmer — San Diego Suburb Division of a Fortune 500 corporation seeks a Programmer/Analyst proficient in any high-level language (e.g. FORTRAN PLI, ALGOL, or PASCAL) to work on a variety of minicomputers (including PDP-11 and HP computers). To \$32,000.

10 924,000.

New Corporate Data Center — Suburban Location Fortune 500 organization, undergoing a major expansion, is in the process of centralizing all systems planning, programming software and computer operations into a new co-porate data center. New center in suburbs of LA. will house the latest in computer hardware and software technology. Openings for Programmer/Analysts, Systems Analysts, System Programmer and Hardware/Software Planners, To \$48,000.

Software Planners. To \$48,000.
Software Development — Minicomputers Successful Orange County minicomputer manufacturer seeks professionals with operating system computer data communications, data base or microprogramming experience. Company is committed to developing and sustaining a complete line of state-of-the-art systems software products. To \$60,000.

Programmer/Analysts — San
Fernando Valley Major institution
located in a desirable suburban setting
north of Los Angeles needs both mini and
large systems Programmer/Analysts.
Organization provides excellent benefits.
To 338,000

COBOJ. Programmer — South Orange County Well-known, diversified financial services firm seels professional with a minimum one year COBOL programming experience. Outstanding work environment. CICS, MVS training provided.

Programmer/Analyst — Learn Data Base Growing Los Angeles financial company seeks OS/COBOL Programmers who want to learn IMS. Presently developing new IMS systems for all financial applications. To \$42,000

Sales Representative — High Income Orange County office of a leasing telecommunications manufacturer is seeking 4 Marketing Representative with a proven track record of selling business systems. Average income of sales force last year was over \$50,000.

EPD Audit Specialist — Extensive In-House Training Fortune 500 organization headquartered in Southern California seeks an EDP Audit Specialist experienced in designing accounting applications in an IBM OS environment. Training in auditing techniques and advanced computing provided. To \$38,000.

MVS Systems Programmer — Technical Support Premier international hardware vendor located in Southern California has opening for customer support Systems Programmer. Successful candidate will possess IBM MVS systems programming experience and the desire to work in a technical support role at a citent site. In \$50,000.



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Spicy! That's the flavor of New Orleans, New Orleans provides its residents an enviable lifestyle. Great restaurants, a warm climate, and world renowned celebrations, such as Mardi Gras and the New Orleans Jazz and Heritage Festival, have kept New Orleans the Queen city of the south. But New Orleans is much more than a great place to live, it's a great place to live, it's a great place to further your Data Processing career. New Orleans is the home of MIDDLE SOUTH SERVICES, INC., the service arm of the Middle South Utility System.

MIDDLE SOUTH SERVICES is currently involved in several projects including large scale IMS DB/DC systems development. The current hardware environment consists of (2) IBM 3084's, MVS/XA, 4381 VM, and Tandem.

# SYSTEMS ASSURANCE ANALYST

Position is assigned to improve the overall service level to computer users through problem and change management. You will recommend procedural policy enhancements through ACP2 and ensure the effective use of the MVS operating system. Position requires three years experience as an Analyst Programmer with extensive large IBM mainframe experience. Excellent communications skills

# **FINANCIAL SYSTEMS ANALYSTS**

Positions involve systems analysis support in payroll, general ledger, and/or other general accounting systems. Strong commu-nications skills are a must. IBM mainframe experience strongly preferred.

# PROJECT LEADER

Requires an individual with strong hands-on management experience with a minimum of three years experience as a first line supervisor. The appropriate candidate will also have four to five years background in coding, design and enhancement of large IBM DB/DC Systems primarily in the areas of Estimating, Bill of Material, Work Tracking and/or General Accounting.

# **IMS SYSTEMS ANALYST**

Position involves systems analysis in a large scale multi-user IMS DB/DC environment, logical Data Base Design, utilization of application generators, testing and debugging of on-line IMS programs. Opening also exists in commercial and engineering applications development.

# ANALYST/PROGRAMMER

The position involves working with our applications development staff, providing IMS and ADF technical consultations and services. The position requires previous programming experience in PL-1. Cobol, IMS DB/DC and TSO/SPF. Opening also exists in commercial and engineering applications development.

MIDDLE SOUTH SERVICES' relocation package includes: relocation allowance (one month's salary)... paid moving expenses... paid house hunting trip...mortgage interest differential...plus interim living.

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The successful applicants who secure these positions must have 3-5 years of intensive IBM computer maintenance experience and be thoroughly capable of performing all maintenance duties for IBM's System/34-36-38, as well as IBM's 43XX series and associated peripherals.

Salary will be based on the individual applicant's experience and ability An attractive benefits program will be provided as well.



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We also have an opening in our Mem-phis Headquarters for a Field Engineer specializing in IBM Series/1 systems. The same requirements apply as shown

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Space Telescope Science Institute has positions available for highly motivated

Space Telescope Science Institute has positions available for highly motivated computer professionals who would like the opportunity to make a contribution to one of the most exciting scientific enterprises of the decade.

ST Sci, which will be the site of operation of NASA's Space Telescope, is presently involved in bilding ground support systems for the operation of the satellite. Work involves design and coding of systems as well as software development tools. On our prototype-oriented development team, you will have access to a wide range of languages as well as state-of-the-art database management hardware. You will work in a small group, where your technical decisions will matter, and your expertise will be counted upon.

ST Sci offers an atmosphere of intellectual stimulation and reward and an excellent comprehensive benefits package in our contemporary facility on the Homewood.

ST Sci offers an atmosphere of intellectual stimulation and reward and an excellent comprehensive benefits package in our contemporary facility on the Homewood Campus of the Johns Hopkins University. Qualified computer professionals with a solid background in practical applications of data structures and structured languages who desire a work environment that encourages initiative and technical excellence while affording the opportunity to learn new skills, should forward a resume and work portfolio to: Space Telescope Science Institute, Personnel Department - 8447, Homewood Campus, Baltimore, MD 21218

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We are currently looking for dynamic individuals who enjoy the challenge and excitement of new environments and technologies as we meet the needs of our expanding client base. Computer Consulting is a contract programming and consulting firm servicing an established client base in the southeast.

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Computer Consulting provides our permanent staff the opportunity and support for personal growth through a variety of assignments, a friendly and professional atmosphere, and an experienced management team. We offer a highly competitive compensation and compete benefits package.

Computer Consulting 3700 Forest Drive Suite 405 Columbia, SC 29204 (803) 738-1994 Att: Diane Williams

No Subcontractors Please

RESEARCH ANALYST. To coordi nate data collections and analysis for col-lege planning, resource allocation and reporting to internal and ex-ternal constituencies: to develop statistical simulation models; to update enrollment and personnel projections; to maintain data and monitor demographic and eco-nomic trends; to assist in conducting insti-tutional research studies and program re-views; and to maintain enrollment, personnel, facilities and financial data base. Must be able to operate Honeywell DPS maintrams computer and IBM PC and be able to work with statistical packages Dases, Mulst be able to operate Honeyweil 
DPS maintrams computer and IBM PC and 
be able to work with statistical packages 
such as SCSS, SFSSX, AMSP, with software packages such as Lotus 1-2-3 and 
Symphony, and with diseale II. Must have 
week, 8:00 a.m. -5:00 p.m. Monday - Fin 
4:00 a.m. -5:00 p.m. Monday - Fin 
sume to Ohio Bureau of Employment Services, P.O. Box 1618, Columbus, OH 
43216, Attn: Leo Elephant, JO #0567362.

# SYSTEMS PROGRAMMERS NORTHEAST - TO \$45,000

Several major clients in the North Several major clients in the North-east have highly visable career op-portunities for telecommunications specialists. Ideal experience: MVS, CICS, VTAM, NCP. Excel-lent benefits and all hiring ex-penses paid. Send resume or call introdictable.

> **Ethan Allen Personnel** 100 State Street Albany, NY 12207 (518) 434-6171

# MICRO CONSULTANT

TO \$35,000
Leading national consulting firm seeks
Microcomputer analyst for Minneapolis
office to do support/training and provide orice to disapport for con-internal/external support for con-sultants. Requires heavy accounting orientation and on-staft programming ex-perience in LOTUS, dBASE, and other popular software. Call Mark David or Tim Smith at (612) 339-9001 on Job # 6932.



### SYSTEMS ANALYST

SYSTEMS ANALYST
The Peopise In People Health Foundation, Inc. (Project HOPE), has a senior level position opening for an experience Systems Analyst. The position reports to the MS Director. Proceedings for an experience Systems Analyst. The position reports to the MS Director Proceedings of the People of the

# COMPUTER **FACULTY POSITION**

Computer Faculty Position: Tenure-track po-sition at undergraduate liberal arts college be-served to the product of the product of the pro-mathematics or computer science required. Master's degree or equivalent in computer scence preferred. Ability to teach some up-per-division courses in computer science reper-division courses in computer science that the product of the product of the total product of the product to the product of the total product to the produ

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S Directors/Managers, Systems Managers, Joseph Managers/Leaders, Systems Anata, Programmer Analysts, EDP Consults, EDP Auditors. Key Positions in Busins and Industry available coast to coast. As a employer paid.



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Tasch in one or more of the following: DBMS, Data Communications. Networking, Systems Analysis and Design, Programming or Small Business Systems. Tenure-track: require a Ph.D. or active ABD in related discipline. Can-didate with masters degree in related discipline considered for ferm contract. Desdiline, April 1, 1985 or until a suitable cardidate can be found. Repaid to D.M. Williams DMI, 37., April 1, 1985 or until a suitable cardidate can be found. Repaid to DMI more than too. University of Northern Colorado, Greeley, CO 90539. More than one position may be littled from applicants responding.

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# SENIOR SYSTEMS ANALYST RPG III PROGRAMMERS IBM SYSTEMS 38 ENVIRONMENT

Quaker, a prestigious leader in the development and production of quality fabrics, is in the process of installing the largest IBM System 38 in the area. The implementation of this totally integrated manufacturing system has necessitated our search for experienced software professionals capable of supporting this extraordinary state-of-the-art system.

# Senior Systems Analyst

Critical position calling for a Systems Professional with a proven track record (6-10 years) in systems development within finance application and order distribution areas. Successful candidate will be a project leader type with in-depth knowledge of IBM System 38. As this is an implementation program you will be involved as a company wide liaison and should be an extremely capable communicator, motivator and leader. You will also act as a systems integrator in defining user application and how they can be addressed with the proposed system software. A BS degree in Computer Science, Business Administration or Accounting desirable.

# RPG III Programmers

We are seeking two individuals having 2-4 years of solid RPG III programing experience within an IBM System 38 environment. Duties will include designing, coding, testing and documentation of application programs. You will also be working closely with the user community in order to train and advise during the initial stages of implementation. The fast track situations call for a BS in Computer Science or a related business discipline, with well developed expertise in problem solving, communications, follow through and initiative. Knowledge of teleprocessing and business application desirable. The potential to expand into applications systems are a natural for these positions.

Quaker is a progressive corporation on the move and committed to the development of its employees. We are offering the successful candidates an extremely competitive salary, fringe benefit and promotion from within programs. Our convenient location off Rtes. 195 and 24 is just minutes

If you feel your recent accomplishments are being overlooked and you are seeking a challenge within an enjoyable work environment please submit reaume and salary history in complete confidence to. John R. Chabot, Quaker Fabrics, 341 Ginnell St., Fall River, MA 02721. We are an equal opportunity employer.



# Telecommunications

The Federal Reserve Bank of San Francisco is currently looking for two outstanding individuals to work in our Online Systems Technology Department:

# Communications Systems Programmer

You would support our state-of-the-art multi-site Communications software environment and your experience would

- 3-5 years in communications systems programming using ALC and VTAM macros.
- Thorough understanding of SNA/SDLC dataflow, OS/VS macros, DOS/VSE, utilities and JCL dump and
- Familiarity with VTAM/NCP/MSWF installations.

# Data Communications Planner

You would plan and design our Bankwide data communications network and your experience would include:

- In-depth data communications experience with emphasis on network planning and design in an IBM SNA network environment.
- Experience in network performance and capacity planning.
- Understanding of cost control and anlaysis.
- Familiarity with communications equipment and major
- Voice and data integration experience is desirable.

We offer relocation assistance, an excellent salary and benefits package that includes 3 weeks vacation, savings plan, low cost cafeteria and even an exercise facility!

Please send your resume to: Marilyn Stubbs or Valerie Maczek, The Federal Reserve Bank of San Francisco, 101 Market St., San Francisco, CA 94105. EOE.

The Federal Reserve Bank of San Francisco



# **Arthur Young is** looking for **Telecommunications** Systems Professionals smart enough to tell computers where to go.

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If you are one of these talented individuals, we are offering you the opportunity to utilize your technical expertise, creativity, and business acumen to excel — and to receive rewards directly tied to your performance.
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with over 5 years' experience in voice and data Communications System Planning, Design and Implementation. Consulting experience and knowledge of Local Area Networking is

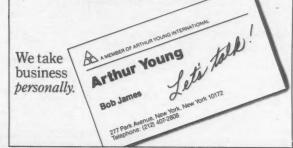
You must be comfortable in a position where you will work with top management in both the private and public sector.

You must demonstrate a talent for leadership, and be the dedicated type of person who attacks goals aggressively.

Positions are currently available at our

practice offices in: San Francisco, Los Angeles, Chicago, Dallas, New York and Washington, D.C. Should you be amongst the five per-cent who can realistically see your future

position in this way, we invite you to send your resume to: Bob James, National Director of Telecommunications Consulting, Arthur Young, 277 Park Avenue, New York, N.Y. 10172.



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Develop control decisions information systems, artificial intelligence systems and methodologies for incorporating Al into systems that generate options in planning and manufacturing. Development of symbolic processing techniques with application to robotics, learning systems and adaptive systems. Capable of developing the algorithms software and hardware architecture. Ph.D in Computer Science. 5 years experience. Los Angeles area. \$30.00 hr. Develop control decisions in-

Send this ad and your resume to:

Job #4432 P.O. Box 865 amento, CA 95804

# SYSTEMS ANALYST

We are currently seeking a computer wishes to expand his horizons wit lizes and rewards talent, ability and

pany that recognizes and rewards talent, ability and initiative. Must have a 4 year degree in mahematics computer science, experience with HP 1000, RTC operating system and skill in use of Fortran. Application software development experience statistics, data base management or real time programming desirable. The successful candidate will be responsible for developing software and installing revenue and load research data acquisition systems in electrical utilities.

We will reward you with an excellent salary and outstanding benefits that include medical, dental and life insurance as well as growth investment. We believe in advancement based upon achievement and encourage professional and personal growth. Contact us today to learn more about your opportunities. Send your resume to.

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Corporate M.I.S.

# SOFTWARE APPLICATIONS MANAGER ARTIFICIAL INTELLIGENCE SPECIALIST

Harris, a Fortune 200 corporation with sales of \$2 billion, is a leading producer of state-of-the-art communication, information processing, and microelectronic products for the worldwide information technology market. The following positions are currently available within the Corporate Management Information Systems Department, located in Melbourne, Florida.

SOFTWARE APPLICATIONS MANAGER
You will manage a staff of 30–40 programmers and systems analysts who are contracted within the company to divisional M.I.S. departments to provide applications project support. You must possess marketing abilities, proposal preparation skills, project management know-how, and a knowledge of systems analysis approaches and the basic software development languages. Good oral and written communications skills are also required. A BA/BS degree and 5–6 years' experience successfully managing people and software projects is required. A Master's degree is preferred. preferred.

ARTIFICIAL INTELLIGENCE SPECIALIST ARTIFICIAL INTELLIGENCE SPECIALIST
You will provide leadership in developing an Artificial
Intelligence/Expert systems program within the Corporate
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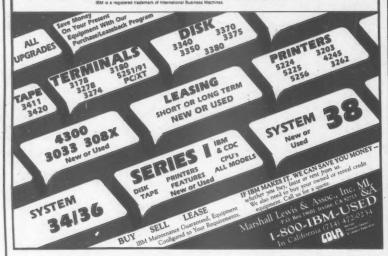


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SAN FRANCISCO SALES OFFICE (415) 421-7330
Western Regional Obvector/William J. Healey
Service Dissist, Manager/Jimy Millione
District Manager/Errie Chemberlan, Mark V. Gil
Debora Comer one ain, Mark V. Glasn

ATLANTA SALES OFFICE (404) 394-0758
Discrict Manager/Jeffrey Meinick
Eastern Regional Director/Michael J. Masters
COMPUTERWORLD, 1400 Lake Hearn Drive, Suite 330,
Atlanta, GA 30319

HOUSTON SALES OFFICE (713) 952-1220 District Manager, William Mahoriey Western Regional Director, William J. Healey COMPUTERWORLD, 8401 Westhelmer, Suite 110, Houston, TX 77063

CLASSIFED ADVERTISING (617) 879-0700 National Sales Manager/Walter S. Kett National Recruitment Sales Manager/Al Dolville COMPUTERVICIBLE, 375 Cochituate Road, Bos 850, Framingham, MA 01701

CW INTERNATIONAL MARKETING SERVICES General Manager/Diona La Muraglia Marketine (Marketine Cuttine Continue) COMPUTERWORLD, 375 Conhibite Road, Box 880, Framingham, MA D17 Conhibite Road, Box 880, F

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Phone: (617) 879-0700, Telex: 95-1153.

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Delany.

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PRODUCTION
PROD **COMMUNICATION SERVICES** 

CONFERENCE MGT. GROUP SYSTEMS

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# **Computerworld Stock Trading Summary**

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if they work
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